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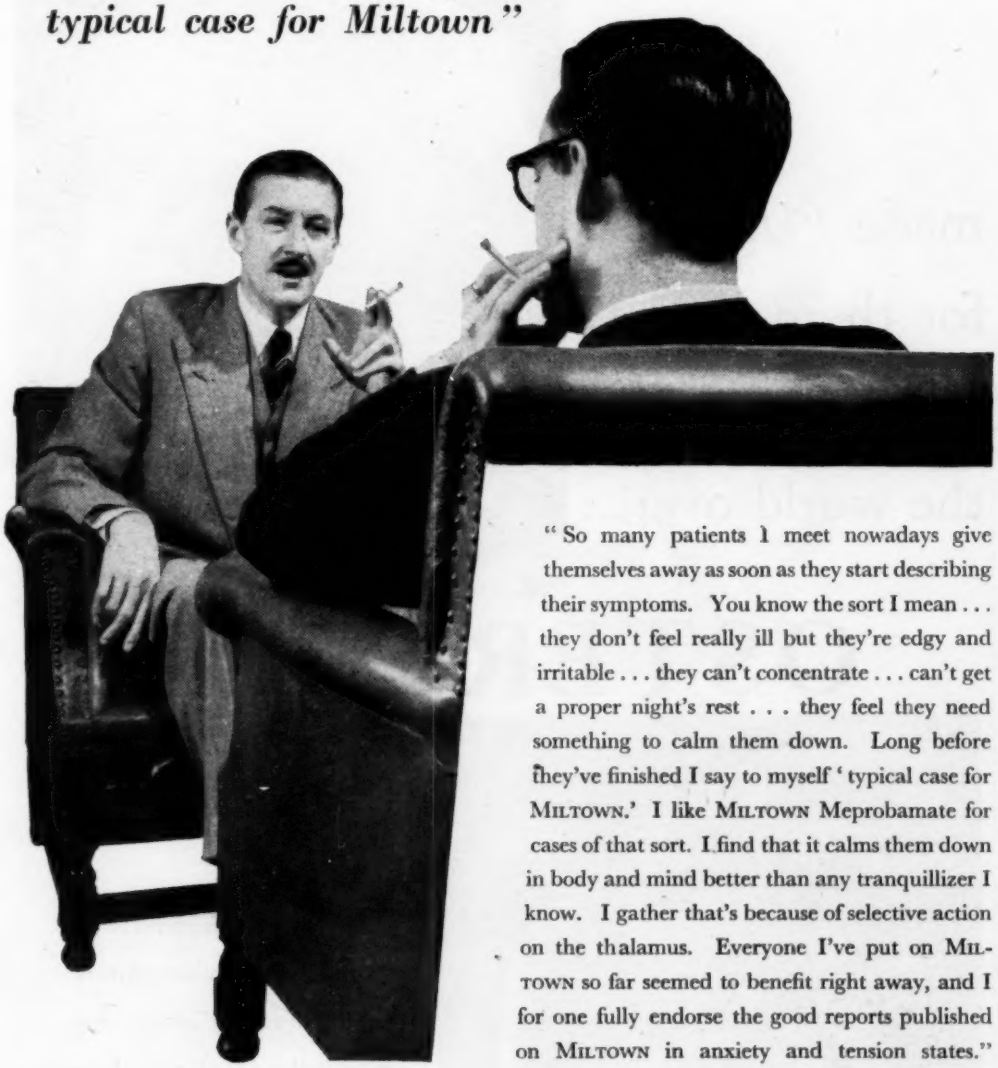

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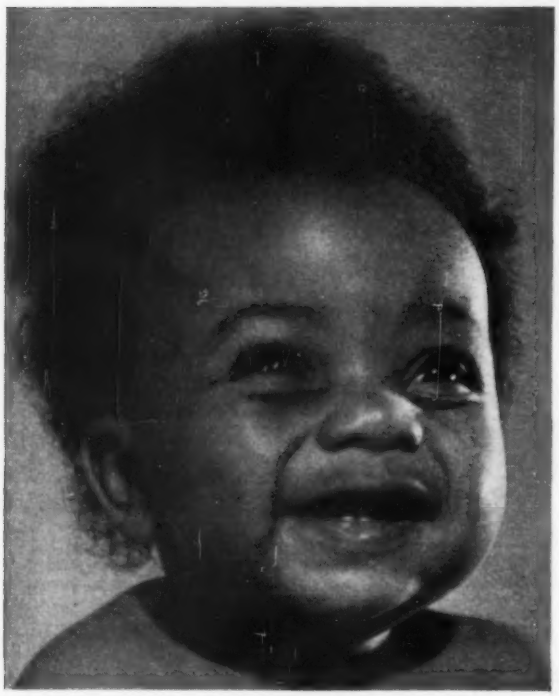

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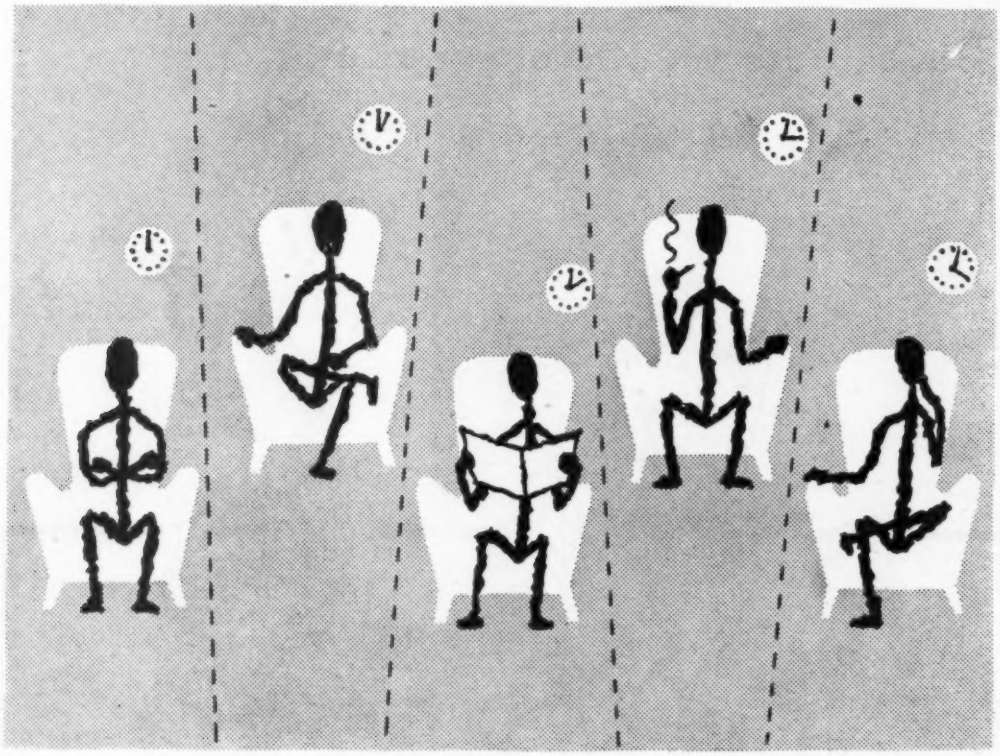

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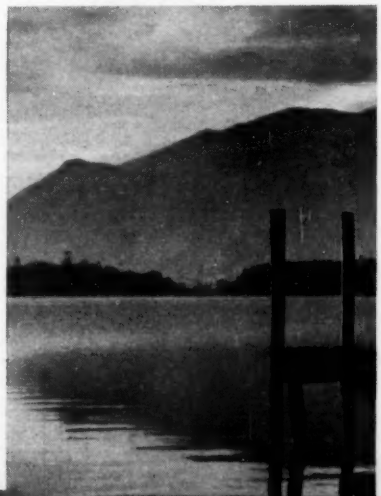

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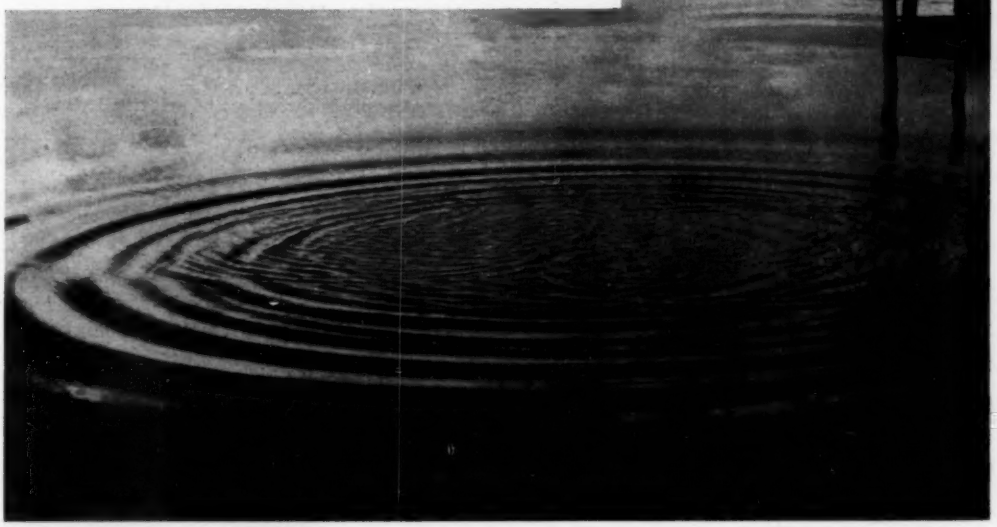

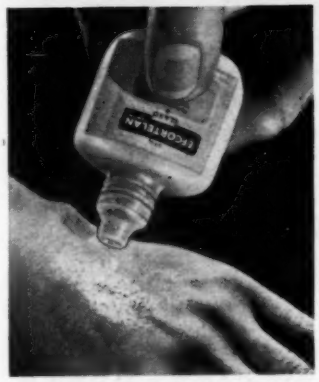

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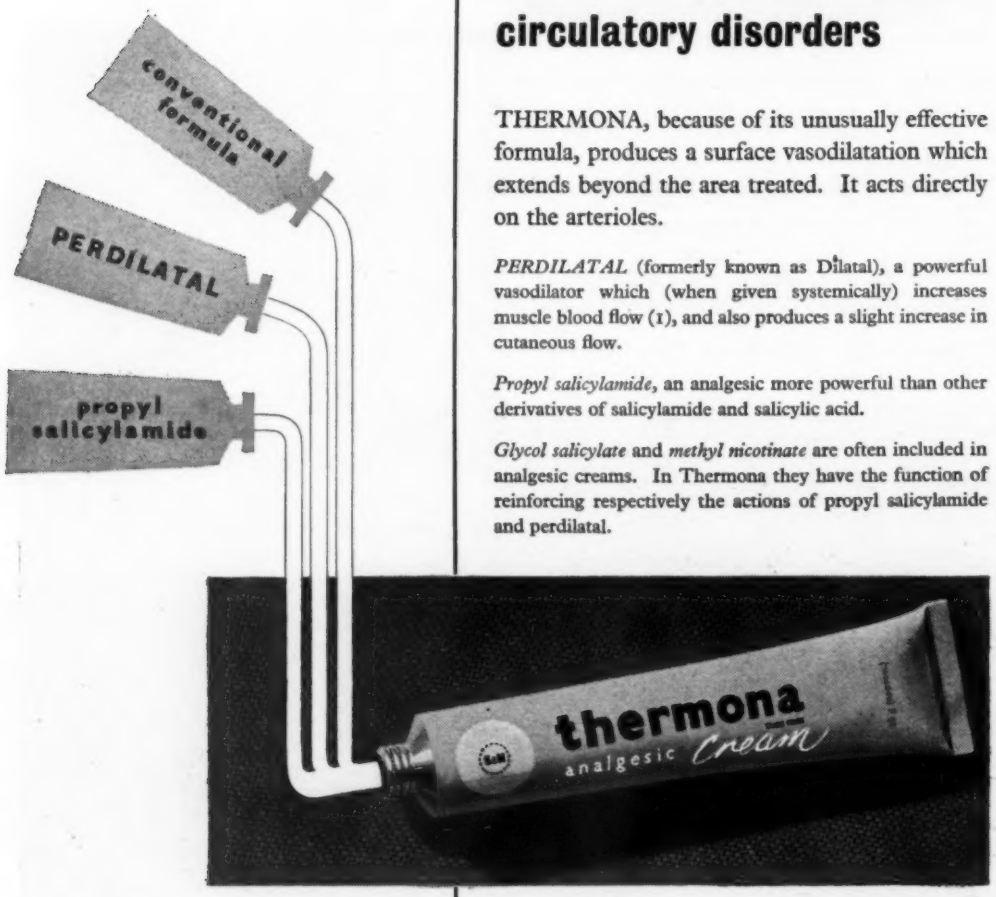

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(1) *Lancet*, 1956, **i**, 257.

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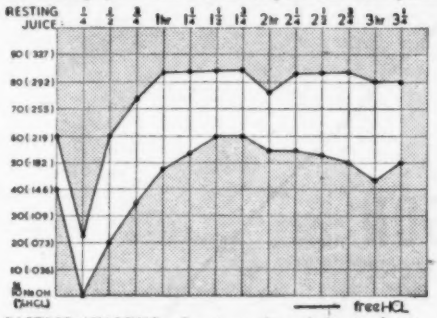
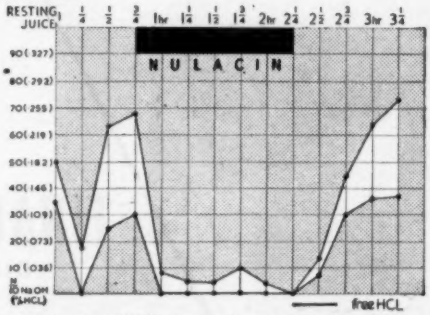


GASTRIC ANALYSIS. *Superimposed gruel fractional test-meal curves of five cases of duodenal ulcer.*



GASTRIC ANALYSIS. *Same patients as in graph on left, two days later, showing the striking neutralizing effect of sucking Nulacin tablets (3 an hour). Note the return of acidity when Nulacin is discontinued.*

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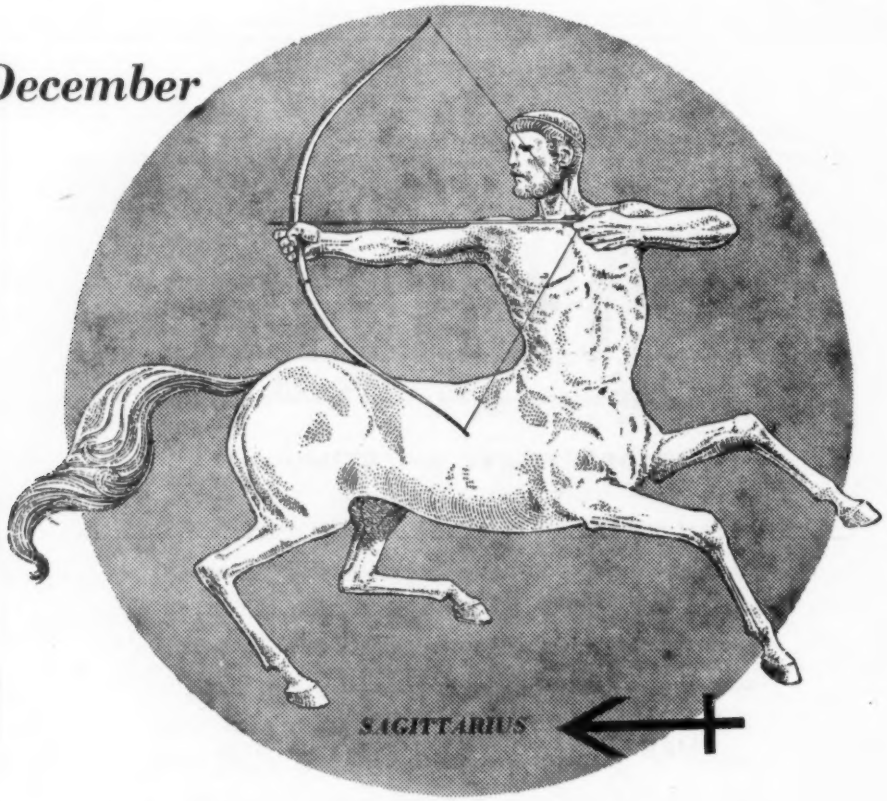

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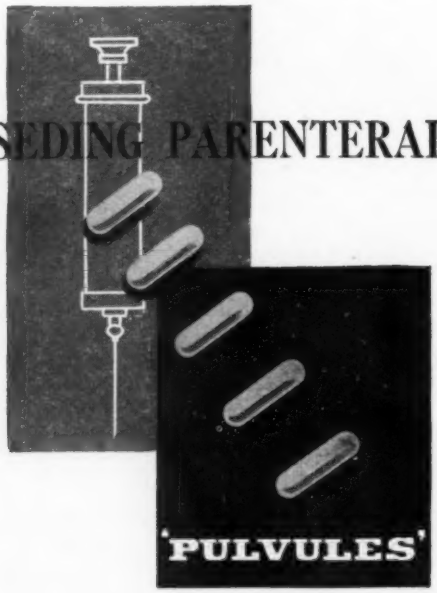

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THE INCIDENCE OF LEUKÆMIA IN ANKYLOSING SPONDYLITIS TREATED WITH X RAYS

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A PILOT survey, conducted under the auspices of the Medical Research Council's Working Party on Leukæmia, of the incidence of leukæmia in patients with ankylosing spondylitis treated with X rays showed an increased incidence of leukæmia in these patients compared with the general population (Court Brown and Abbatt 1955). While this pilot survey was still in progress, the present investigation was begun in January, 1955, to provide a series in which X-irradiated cases of ankylosing spondylitis could be compared with similar cases never given X-irradiation. The dose-response investigation, which arose from the above-mentioned pilot survey, was "based on the tacit assumption that the death rates from leukæmia and aplastic anæmia amongst unirradiated sufferers from ankylosing spondylitis are no greater than occur amongst members of the general population of the same age and sex distribution" (W. M. C. Brown and R. Doll, personal communication).

Court Brown and Abbatt (1955) suggested that their evidence might mean that part of the observed increase in leukæmia was due to X-irradiation. In Nagasaki and Hiroshima the death-rate from leukæmia has increased as a consequence of the atomic explosions over those cities in 1945 (Folley et al. 1952, Lange et al. 1954, Moloney and Kastenbaum 1955). More recently leukæmia has been reported in patients irradiated for tumours, ankylosing spondylitis, enlargement of the thymus, and thyrotoxicosis (Blom et al. 1955, Seidlin et al. 1955, Simpson et al. 1955, van Swaay 1955, Abbatt et al. 1956, Pochin et al. 1956). Stewart et al. (1956) have recently published a preliminary report on the development of leukæmia and malignant disease in childhood after diagnostic irradiation in utero. The establishment of the relationship of leukæmia to ankylosing spondylitis, with and without irradiation, is therefore of unusual importance.

The problem is essentially that of assessing the qualitative and quantitative effects of irradiation in man. Since in many cases this can only be done by studying patients who have been treated by irradiation, in the present instance ankylosing spondylitics, it is necessary to have a comparable series of patients with the same disease who have not been irradiated.

We here report the results of comparing a small group of non-irradiated patients with ankylosing spondylitis with a larger irradiated group of patients with the same disease. Both groups were composed of people in receipt of pensions for ankylosing spondylitis from the Ministry of Pensions and National Insurance.

Materials and Methods

The material consisted of data taken from the records of the Ministry of Pensions and National Insurance. These were the medical records of men who had served in the Forces at some time since Sept. 3, 1939, and had been pensioned for ankylosing spondylitis before Dec. 31, 1955.

The records of the Royal Navy, the Army, the Royal Air Force, and the Mercantile Marine and Auxiliary Services were examined. A list was made of all the cases in which a pension had been issued for the following conditions: Ankylosing spondylitis (spondylitis ankylopoietica); spondylitis deformans; spondylitis rhizomelique; Marie-Strümpell's disease; von Bechterew's disease; spondylitis either alone or in combination with any other term not included above; sacro-iliac disease; arthritis of spine and sacro-iliac joints; and all other cases in which the sacro-iliac joints were mentioned in the diagnosis.

In every instance the file of the case, containing both Service and post-discharge medical records, was seen and the final diagnosis noted. More than half the cases originally diagnosed as sacro-iliac arthritis, sacro-iliac disease, &c., had since been diagnosed as ankylosing spondylitis, as had most of the cases of spondylitis deformans. On the other hand, in a very small proportion of cases the diagnosis had been changed from spondylitis to sacro-iliac arthritis, &c. Only those cases in which the diagnosis at the last recorded medical examination was confirmed as ankylosing spondylitis were used for this investigation.

In each case the date of birth (as accepted by the Service), nature and dates of treatment, and, where they applied, the date of death and the certified causes of death were recorded. The presence of other disease was also noted. No attempt was made to obtain precise details of radiation dosage, the object of the investigation being to form two series of cases, one of men who had been irradiated, the other of men who had not been so treated. In the irradiated series the dates of first treatment were recorded and the number of "courses" of irradiation as described by the radiotherapists. The accuracy of this information from the Ministry's records—i.e., places and dates of treatment—was then checked against the nominal roll of irradiated ankylosing spondylitics compiled from the radiotherapy centres of England, Wales, and Scotland in the course of the dose-response investigation of the Medical Research Council (1956). Although the evidence obtained from the Ministry sources contained inaccuracies as regards year of treatment, it included cases which were not represented in the Medical Research Council's nominal roll. In cases in which no X-ray treatment was recorded in the headquarters file, all other subfiles—e.g., treatment files—were examined. When these files also gave no evidence of radiotherapy, the hospitals at which the pensioner had at any time attended were written to, and information on the treatment given was requested. The cases in which there was still no evidence of radiotherapy were then cross-checked against the nominal roll of patients irradiated for ankylosing spondylitis.

To exclude the possibility that the non-irradiated patients had some disease other than ankylosing spondylitis, an independent panel was appointed by the Medical Research Council and asked to examine X-ray films from both series. For this purpose an equal number of randomly selected sets of X-ray films from both series (58 in all) were submitted to the panel. The panel was composed of a diagnostic radiologist (Dr. F. Campbell Golding), a therapeutic radiologist (Prof. B. W. Windeyer), and an orthopædic surgeon (Mr. H. J. Seddon). In 48 cases a unanimous decision was reached, leaving 10 cases, 5 from each group, in which there was some residual doubt. In 3 of these cases, all from the non-irradiated group, the diagnosis of ankylosing spondylitis could not be substantiated. The presence of 3 cases not diagnosed as ankylosing spondylitis in one group is of no statistical significance ($P = 0.25$, see Appendix). The panel agreed

* Seconded to the Medical Research Council staff from August, 1955.

that, on the evidence submitted, there was no essential difference between the two series.

The series thus obtained were not entirely free from selection, because (1) only males were used (since there are very few female spondylitic pensioners, and ankylosing spondylitis is predominantly a disease of the male); (2) patients resident outside England, Wales, and Scotland were excluded; (3) the ages were necessarily limited to those of serving men; and (4) such men were of a standard of physical and mental fitness required by the Armed Forces. (The last two limitations do not apply to the same degree to pensioners from the Mercantile Marine and Auxiliary Services.) There could be no guarantee that all the cases in the Ministry's records were included, because it had been found from previous experience that some were missed for various reasons —wrong coding, unusual form of diagnosis, &c.—but there are no known grounds for suggesting that this produced selection.

Usually it is impossible to compare such a series directly with the total male population, because the standard of health in Forces personnel is probably higher than that of the population as a whole. We are not aware of any evidence that any other diseases predispose to leukæmia, though there is the possibility that certain sections of the general population may be exposed to greater risks from industrial irradiation than are Servicemen. If this is correct, the bias would lie in the direction of a lower incidence of leukæmia in Service personnel than in the general population. Since all the patients in this survey are pensioners they have all been examined periodically for assessment of the degree of disablement and have obtained their treatment (both radiotherapeutic and other) through regional Ministry of Pensions and National Insurance offices. They have also necessarily to report all their changes of address to the Ministry so that their pensions shall continue to be paid to them. In consequence the series have one feature of outstanding importance in that they are "closed populations," by which is meant that all the patients remained under observation from the date of discharge from the Forces until the end of the investigation or until death.

Results and Discussion

In 2026 cases the final diagnosis was ankylosing spondylitis; 1627 had been treated by irradiation and 399 had not (table I). 82 pensioners had died by the end of 1955; 64 (3·9%) in the irradiated series and 18 (4·5%) in the non-irradiated (tables II and III). 7 of these deaths were attributed to leukæmia; in 1 other case leukæmia was given on part II of the death certificate, though death was not certified as being due to this cause. This last case could not be used for comparison with the Registrar-General's tables, because these are compiled from assigned causes of death. All 8 cases in which leukæmia was mentioned on the death certificate were in the irradiated series.

TABLE II—ANKYLOSING SPONDYLITIS, ASSIGNED CAUSES OF DEATH, IRRADIATED AND NON-IRRADIATED SERIES

Assigned cause of death	Number of cases	
	Irradiated	Non-irradiated
Pulmonary tuberculosis	14	7
Malignant disease, excluding leukæmia	10	4
Pneumonia, all types	4	1
Cardiovascular disease other than rheumatic	7	2
Leukæmia, all types	7	0
Accident	3	0
Suicide	2	0
Found drowned (court verdict)	0	1
Aplastic anæmia	1	0
Chronic colitis	0	1
Postoperative death	3	0
Poliomyelitis	1	0
Encephalitis	1	0
Ankylosing spondylitis	1	0
Rheumatic heart-disease	4	0
Chronic bronchitis	1	0
Subarachnoid hæmorrhage	1	1
Nephritis, uræmia	4	1
Total	64	18

The mean age at death was 39·7 years in the irradiated series and 40·7 in the non-irradiated. The difference was not significant and might be expected to occur by chance seven or eight times out of ten. The certified assigned causes of death are given in table II. There is a gross and obvious excess of leukæmic deaths in the irradiated series. These cases are described in a Medical Research Council special report as cases 6, 7, 9, 11, 14, 15, 23, and 27. The high incidence of tuberculosis is striking but not unexpected in view of the known association between the two conditions. The 1 death from aplastic anæmia (Medical Research Council report, case 42), though of no statistical significance, should be noted. The incidence of malignant disease, excluding leukæmia, was no greater than expected.

After analysis of the data on the basis of the national death-rate (see Appendix), it was found that in the combined series 0·5 death was expected to be assigned to leukæmia, 0·33 in the irradiated series and 0·17 in the non-irradiated. The probability of obtaining by chance 7 leukæmic deaths in the combined series was found to be less than one in a million, of obtaining 7 deaths in the

TABLE I—ANKYLOSING SPONDYLITIS, CASES BY AGE-GROUPS, IRRADIATED AND NON-IRRADIATED SERIES

Year of entry into cohort	Age-group in 1939																						Total	
	0–		5–		10–		15–		20–		25–		30–		35–		40–		45–		50–			
	I	N	I	N	I	N	I	N	I	N	I	N	I	N	I	N	I	N	I	N	I	N	I	N
1940	..	..	..	..	..	..	..	..	..	3	..	4	..	1	..	..	..	..	..	..	..	..	0	8
1941	..	..	..	..	..	..	1	..	5	5	..	8	..	4	..	2	..	1	..	1	..	..	6	21
1942	..	..	..	..	..	..	5	2	17	11	9	9	4	7	..	4	1	5	..	1	..	..	36	39
1943	..	..	..	..	..	..	17	7	26	18	24	15	15	12	6	6	1	3	..	..	..	..	89	61
1944	..	..	..	..	1	..	45	7	65	14	53	17	33	21	9	15	1	4	..	2	..	1	207	81
1945	..	..	..	..	3	1	47	2	49	10	59	25	42	20	14	9	2	3	..	2	..	..	216	72
1946	..	..	..	..	12	2	87	12	87	26	47	21	36	11	16	4	1	..	1	..	..	..	287	76
1947	..	..	..	..	26	2	58	5	41	3	35	2	20	1	13	..	3	..	..	..	..	..	196	13
1948	..	..	1	..	18	1	41	2	38	2	16	..	15	..	2	..	1	..	..	..	..	..	132	5
1949	..	..	2	..	20	..	32	1	35	..	17	1	14	2	4	..	..	..	..	1	1	..	125	5
1950	..	..	4	..	8	2	29	..	18	..	26	..	10	..	1	..	2	..	..	..	..	..	98	2
1951	..	..	7	..	9	1	14	..	16	..	14	..	8	..	2	..	1	..	..	..	..	..	71	1
1952	..	..	7	..	14	1	12	2	17	..	13	1	9	1	2	..	..	1	2	..	..	..	76	6
1953	..	..	8	1	7	4	16	..	5	..	7	..	2	..	1	..	1	..	1	..	..	..	48	5
1954	1	..	12	1	4	3	3	..	4	..	2	..	..	..	2	..	..	..	..	..	..	..	28	4
1955	..	..	..	..	..	..	1	..	1	..	2	..	..	..	..	..	..	..	..	..	..	..	4	0
Not known	..	..	..	..	..	..	2	..	2	..	4	..	..	..	..	..	..	..	..	..	..	..	8	0
Total	1	0	41	2	122	17	410	40	426	92	328	103	208	80	72	40	14	17	4	7	1	1	1627	399

Each age-group column is divided into irradiated (I) and non-irradiated (N).

irradiated series much less than one in a million, and of obtaining no deaths in the non-irradiated series four in five.

The results establish beyond any reasonable doubt that leukæmia is associated with (1) ankylosing spondylitis, or (2) irradiation, or (3) ankylosing spondylitis treated by irradiation. To decide between the first and second alternatives the two series were directly compared. For comparison within the series it is proper to utilise all cases of leukæmia irrespective of whether or not they have been assigned to leukæmia in the Registrar-General's returns, since no comparison with the national death-rate is made.

The probability of all 8 cases of leukæmia occurring in either series by chance was found to be 1 in 25. If the data from this survey were the only available evidence, such a level of significance could not be regarded as more than highly suggestive. The hypothesis that ankylosing spondylitis is a factor in the production of leukæmia cannot be excluded until a larger control series is available for comparison. It is hoped to obtain such a series from the records held by the Ministry of Pensions and National Insurance for the 1914–18 war, when therapeutic irradiation was uncommon. However, there is so much independent evidence of the leukæmogenic properties of ionising radiations, as a result of exposure in man and in laboratory animals, that there can be little doubt that irradiation plays an important part in the production of leukæmia.

TABLE III—ANKYLOSING SPONDYLITIS, DEATHS BY AGE-GROUPS, IRRADIATED AND NON-IRRADIATED CASES

Year of death	Age-group in 1939																Total	
	10–		15–		20–		25–		30–		35–		40–		45–			
	I	N	I	N	I	N	I	N	I	N	I	N	I	N	I	N	I	N
1943	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	0	1
1944	..	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	0	2
1945	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	0	2
1946	..	..	1	..	1	1	..	..	..	..	..	1	..	..	..	..	2	2
1947	..	..	1	..	..	1	2	1	2	1	..	..	..	..	..	..	5	3
1948	..	..	1	..	..	..	..	1	2	..	..	1	..	..	..	..	3	2
1949	..	..	..	..	..	..	2	..	3	1	..	..	..	1	..	1	5	3
1950	..	..	1	..	1	..	..	1	1	..	..	..	..	..	..	..	3	1
1951	..	..	..	..	3	..	..	..	2	..	..	..	..	..	..	..	5	0
1952	..	..	1	..	3	..	1	..	2	..	1	..	..	1	1	..	9	1
1953	..	..	..	..	1	..	3	..	1	..	3	..	1	..	..	..	9	0
1954	1	..	1	..	3	..	1	..	1	..	1	..	1	..	..	..	9	0
1955	..	..	1	..	2	1	3	..	7	..	1	..	..	..	..	..	14	1
Total	1	0	7	0	14	4	12	3	21	4	6	3	2	2	1	2	64	18

Each age-group column is divided into irradiated (I) and non-irradiated (N).

The possibility that irradiation was the sole cause of the leukæmia was tested, but the data were insufficient to provide a firm answer. It is hoped to obtain a larger series of non-irradiated individuals by using information from the 1914–18 war, which may make possible a final decision on the exact rôle of irradiation.

On the third possibility the data provide no evidence. That it requires serious consideration is apparent from the association of various degrees of anæmia with non-irradiated ankylosing spondylitis. What may be termed minor variants on the main hypotheses are also consistent with the data in their present incomplete form. These minor variants are as follows:

(1) There is a common cause for ankylosing spondylitis and leukæmia.

(2) Ankylosing spondylitis predisposes to leukæmia, the risk varying with the duration of the spondylitis.

(3) The predisposition of ankylosing spondylitics to leukæmia varies with the severity of the spondylitis.

(4) Some form of treatment of ankylosing spondylitis other than irradiation predisposes to the development of leukæmia.

These possibilities must remain in doubt until a larger control series has been obtained and investigations have been made on the effect of irradiation in other diseases.

The ætiology of leukæmia is still unknown, but ionising radiations can, under certain conditions, be leukæmogenic in both animals and man. Whether such irradiation can be the sole cause of leukæmia is still in doubt, but a working hypothesis would be that all leukæmia is due either to irradiation—i.e., that which is normally present in the environment—or to the action of radiomimetic agents. On this hypothesis background radiation—i.e., that normally present—would be leukæmogenic in susceptible strains or individuals. It could then be postulated that those spondylitics who develop leukæmia are such susceptible individuals, and that additional irradiation acts as a precipitating factor bringing forward the date of onset of leukæmia rather than causing it. The evidence could be interpreted on these lines, but it is as yet too scanty for any decision to be reached. The data have been recorded in such a way that it will be possible to review them from time to time, and it is hoped eventually to obtain decision evidence on this point.

Ankylosing spondylitis can be a seriously disabling condition whatever the method of treatment. Clearly the hazards involved in a particular method of treatment must be outweighed by the benefits. The one concrete fact which has emerged from this survey is that, in the cases investigated, there is already a gross excess of deaths from leukæmia, and the odds against this excess being due to chance are greater than a million to one. Although it is not yet certain that radiation alone is responsible for this excess of leukæmia, the available evidence, both from this survey and from other sources quoted above, all points strongly to such a conclusion.

Summary

The records of two series of cases of ankylosing spondylitis from the Ministry of Pensions and National Insurance have been examined. One of these series, of 1627 men, had been treated by radiotherapy; the other, of 399 men, had not been irradiated but had been treated by other methods.

The expected deaths from leukæmia have been calculated and compared with those actually observed. In the non-irradiated series 0·17 death was expected and none observed, a very good agreement between expectation and observation. In the irradiated series 0·33 death was expected and 7 were observed. The odds against this excess of deaths being due to chance were greater than 1,000,000 to 1.

It has been established that leukæmia is associated with (1) ankylosing spondylitis, or (2) irradiation, or (3) ankylosing spondylitis treated by irradiation.

The hypothesis that irradiation was the sole cause of the leukæmia was tested, but the data were insufficient to provide a firm answer. It is hoped to obtain a larger series of non-irradiated individuals by using information from the 1914–18 war, which may make possible a final decision on the exact rôle of irradiation.

The data in this survey have been discussed in the light of other independent evidence. It has been concluded that irradiation plays the main part in the production of the observed cases of leukæmia.

We thank Dr. W. M. Court Brown, Dr. W. R. S. Doll, and Dr. C. A. B. Smith for valuable suggestions and coöperation; Dr. L. H. Gray, Prof. A. Bradford Hill, Prof. W. V. Mayneord, Prof. J. S. Mitchell, Dr. E. E. Pochin, Dr. R. C. Turner, Prof. B. W. Windeyer, and Prof. L. J. Witts for helpful advice and criticism in the preparation of this paper; and the chief medical officer of the Ministry of Pensions and National Insurance for permission to publish data taken from the records of the Ministry. We should also like to thank all the hospital authorities who coöperated in this investigation.

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Statistical Appendix

The data have been analysed by the comparative-cohort method. The essential details of this method have been described and discussed by Case and Hosker (1954). Certain points peculiar to the present investigation need further consideration.

Each man entered the analysis in the year in which he was discharged from the Forces with ankylosing spondylitis. It was assumed that the dates of discharge were distributed evenly about the mid-point of the year, and all entries were made at that point. The date of discharge, as opposed to the date of firm diagnosis or possible date of onset, was used to avoid the creation of a bias. For example, a man who was diagnosed as having ankylosing spondylitis, treated by irradiation, and developed leukæmia, and whose death was certified as being due to leukæmia while he was still in the Forces would not then have been represented in the Ministry records as a case of ankylosing spondylitis but as a death from leukæmia. Any patients who developed any of the fatal complications of ankylosing spondylitis before discharge from the Forces might similarly be missed from the series. By taking the date of entry into the analysis as the date of the discharge board many man-years have been lost to the investigation, but biases of the type indicated above have been avoided.

Irradiated Series.—Each man was entered into the cohort appropriate to his age-group in the year in which irradiation began. It was assumed that the dates of starting treatment were distributed evenly about the mid-point of the year, and all entries were made at that point. Each man remained in the cohort until the end of 1955, unless he died before that date. Deaths were also regarded as being distributed evenly about the mid-point of the year. The total number of man-years lived by the series was then obtained by summation (table I). In 8 cases it was impossible to determine the year of first treatment. A correction was made for these, but the additional expected deaths from leukæmia (0·001639) did not affect the probability of obtaining the observed number of deaths. The man-years lived by this series were 13596·5.

Non-irradiated Series.—This series was divided into two groups: (1) those men who never had irradiation, and (2) the pre-irradiation portion of the lives of those men who were subsequently irradiated. In the first group each man was entered into the appropriate cohort in the year in which he was discharged from the Forces with ankylosing spondylitis. The subsequent treatment of this group was as for the irradiated series. The second group were also entered into the appropriate cohort at the year of discharge, but were transferred to the irradiated group when X-ray treatment was started, the convention of the mid-point of the year again being used (table I). These cases contributed 2740 to the total of 6956 man-years lived by the non-irradiated series.

The expected deaths from leukæmia in each year, for both series, were then obtained by multiplying the man-years lived in that year by the death-rate for leukæmia for that year for that age-group. The total expected deaths were then found by summation and compared with the observed deaths. Since no tables of death-rates for England and Wales plus Scotland existed these were prepared by taking the total male deaths from leukæmia, all types, in England and Wales plus Scotland, for each 5-year age-group in each of the relevant years and dividing them by the total male population of the same areas for the same age-group and period. The data were obtained from the Registrar-General's Statistical Review of England and Wales, the Annual Report of the Registrar-General for Scotland, and the Annual Abstract of Statistics for the years in question. For the years before 1946 the population of Scotland, in the relevant age-groups, is given in 10-year groups only. For these years it was therefore necessary to interpolate into the published tables, and this was done by the standard Newtonian formula. Since the tables for 1955 are not yet available, the 1954 rates were used for this year (table IV†).

The comparison of the observed deaths from leukæmia (7) with the expected deaths (0·50) in the combined series was made by calculating the expectation of obtaining 7 or more deaths, on the basis of a Poisson distribution, and was found to be less than 10^{-6}. Similarly the comparison of observation with expectation in the irradiated series gave a value for P of less than 10^{-6}, and in the non-irradiated series the probability of obtaining 0 death from leukæmia was found to be 0·84.

The comparison of the two series, using all 8 deaths from leukæmia, was made by using the binomial expression:

$$\left(\frac{13596{\cdot}5}{20552{\cdot}5} + \frac{6956{\cdot}0}{20552{\cdot}5}\right)^8$$

—i.e.,

$$\left(\frac{\text{Man-years of irradiated series}}{\text{Man-years of combined series}} + \frac{\text{Man-years of non-irradiated series}}{\text{Man-years of combined series}}\right)^8$$

the sum of the first and last terms of the expansion giving the probability that all the 8 deaths are confined to one or other of the two series. This was found to be about 0·04.

The probability of 3 cases not diagnosed as ankylosing spondylitis occurring in the non-irradiated sample submitted to the viewing panel was calculated from the binomial expression

$$\left(\frac{29}{58} + \frac{29}{58}\right)^3$$

the sum of the first and last terms of the expansion giving the probability of the 3 cases occurring in one or other of the two series. This was found to be 0·25.

MEAN VENOUS PRESSURES IN THE FIRST HOURS OF LIFE

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THE first object of this paper is to establish the normal range of mean venous pressure in the first hours of life, for hitherto there has been little reference to this. There are some generalisations, but we have been unable to find published data. Mollison (1951) and Mollison and Cutbush (1949) found that the mean venous pressure in the first hours of life varied between + 3 and + 5 cm. of saline solution. Other workers, writing on erythroblastosis fœtalis, have cited higher figures; they mention the effects of exchange transfusion and hold that severely affected infants die of cardiac failure as do severely anæmic adults (Howarth and Sharpey-Schafer 1947) but they do not mention the effect of posture on the mean venous pressure.

Our second object is to examine the mean venous pressure in the pulmonary syndrome of the newborn, in which the pathological findings are hyaline membrane, pulmonary œdema, pulmonary hæmorrhage, and resorption atelectasis, and in the syndrome of cerebral irritation, for it seems to us, as to others, that these syndromes have points of clinical and pathological similarity to each other and to cardiac failure (Lendrum 1955, Duran-Jorda et al. 1956).

We have paid attention to the effect of posture on the mean venous pressure not only because it may be an

† Copies of this table may be had from THE LANCET Office.

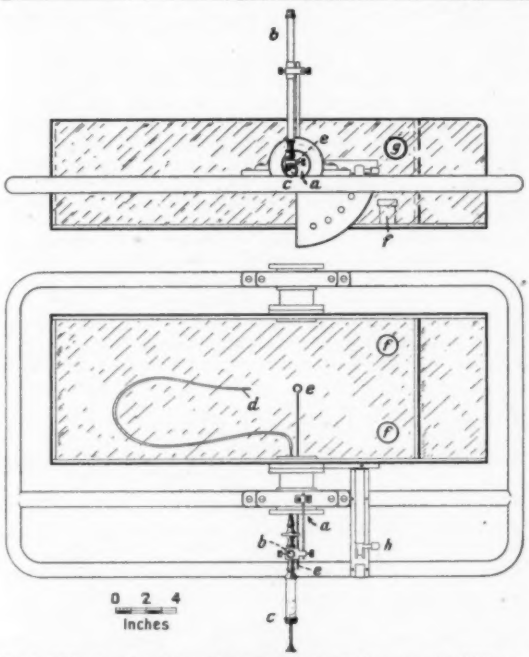

Fig. 1—Side elevation (above) and plan (below) of perspex box (lid not shown) and frame: *a*, axis; *b*, manometer; *c*, syringe; *d*, polyethylene catheter; *e*, sliding pointer to indicate level of sternal angle; *f*, studs to maintain baby's position; *g*, hole for introduction of oxygen; *h*, bolt for maintaining position of box.

indication of the cardiac origin of a rise of pressure but also because of its possible application to the position in which such babies are nursed.

Method

The mean venous pressure was measured through the umbilical vein and recorded as venous pressure in cm. of 5% dextrose. Fig. 1 shows the apparatus. A 'Perspex' box 20 × 8 in. is supported in a frame and can be tipped to an angle of 45° about its axis, *a*. A manometer, *b*, is attached to the frame and connected via a two-way tap with a syringe, *c*, or a polyethylene catheter, *d*, of 1 mm. bore. The catheter is introduced to the box through a hole in the tipping axis, *a*. A sliding pointer, *e*, attached to the manometer, also passes through this hole. The box has a fitted lid so that oxygen may be given.

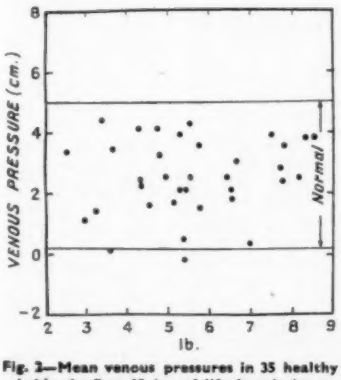

Fig. 3—Mean venous pressures in 35 healthy babies in first 18 hr. of life in relation to birth-weight.

The baby is put in the box, and by adjusting the pointer a zero level in the manometer corresponding to baby's sternal angle is found. The syringe and catheter are filled with 5% dextrose containing 500 units of heparin in 100 ml., and this solution is allowed to fill the manometer to the zero level.

The catheter is passed up the umbilical vein for 5·0–8·5 cm. until the meniscus in the manometer rises and falls freely with respiration, and the level at which the excursions of the meniscus become stable is recorded. The baby, supported under the axillæ, is tipped feet downwards to 45°. If the position of the sternal angle has altered, the pointer is readjusted, and further readings of the venous pressure are recorded. Then the baby is returned to the horizontal, and the final pressure is read.

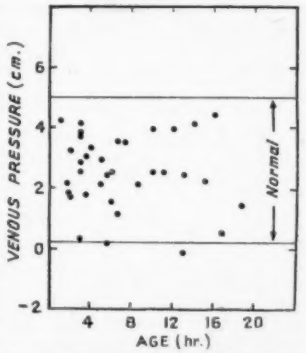

Fig. 2—Mean venous pressures in 35 healthy babies weighing 2–9 lb. at birth in relation to age at which pressure was measured.

Most of the recordings were made during the first 24 hours of life, and the babies were usually quiet during the procedure. Occasionally a small feed was given to stop restlessness.

Five groups of babies were tested:

Group 1: 35 normal babies with birth-weights of $2^1/_2$–9 lb.
Group 2: 12 babies who were normal at the time of measurement but had required resuscitation at birth.
Group 3: 32 babies with respiratory difficulty.
Group 4: 8 babies with cerebral irritation.
Group 5: 5 babies with erythroblastosis fœtalis.

Results

Group 1: 35 healthy babies (figs. 2 and 3).—The mean of the recordings was + 2·6 cm. in the supine position (S.D. ± 1·2 cm.). Therefore one might expect 95% of normal babies to have venous pressures of + 0·2 to + 5·0 cm. When 15 of these babies were tipped, the mean of the recordings was −2·0 cm. 5% dextrose (S.D. ± 1·5). The mean fall in pressure as the result of tipping was 4·9 cm. (range 3·1–7·1 cm.).

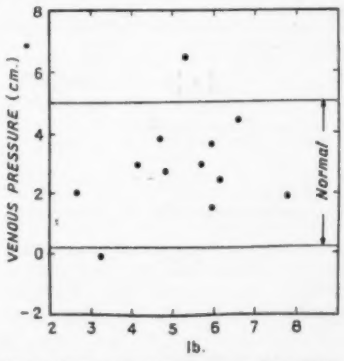

Fig. 4—Mean venous pressures in first 20 hr. of life in 12 healthy babies who had required resuscitation at birth.

Fig. 2 shows that birth-weight did not influence the normal venous pressure. Fig. 3 shows that, during the first 18 hours of life, age did not affect the venous pressure in normal babies.

Group 2: 12 babies who were normal at the time of measurement but had required resuscitation at birth.—Fig. 4 shows that only 1 of these 12 babies had a pressure above + 5·0 cm., the upper limit of the normal range. 7 of these infants were tipped, and in this position the mean of the venous pressures was + 0·7 cm. (S.D. ± 2·1) and the mean fall in pressure 4·7 cm. (range 1–8 cm.).

Group 3: 32 babies with respiratory difficulty, divided into two groups: (*a*) those with venous pressure measured in the first six hours; and (*b*) those measured later.

(*a*) There were 25 babies in this group (fig. 5). In the 17 survivors the mean of the recorded pressures was

+ 5·7 cm. (S.D. ± 2·7). This was significantly higher than the mean of recorded pressures for normal babies (t = 4·4). In the 8 babies who died the mean of the recorded pressures was + 3·1 cm. (S.D. ± 1·6), which, though not significantly higher than in the normal (t = 0·8), was significantly lower than in the survivors in this group (t = 3·0). The 10 infants with a venous pressure higher than + 5·0 cm. all survived, whereas about half of those with a venous pressure below + 5·0 cm. died (table I). The causes of death are set out in table II.

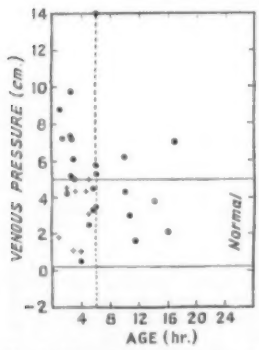

Fig. 5—Mean venous pressures in first 6 hr. of life in 25 babies with respiratory difficulty (Circles, survivors. Crosses, fatal cases.)

(*b*) 7 babies whose recordings were made later than the first six hours of life. These measurements were made in 7 infants with respiratory difficulty, all of whom survived, between the ages of 6 and 42 hours.

All except 2 fell within the normal range.

Serial readings were made in 5 of these 32 infants; in each case the pressure fell, and in 3 survivors the pressure dropped into the normal range with clinical improvement.

Group 4: 8 babies with cerebral irritation.—Fig. 6 shows that the venous pressure was above + 5·0 cm. in 3 of these infants and normal in 5. All the measurements were made in the first 24 hours of life, and all the babies survived. Serial recordings were made on 3 infants; 2 showed a rise and 1 a fall in pressure.

Group 5: 5 babies with erythroblastosis fœtalis. These recordings showed that the mean venous pressure was raised in all the 4 survivors before exchange transfusion. The 5th infant, who died, had a normal venous pressure before exchange transfusion, and necropsy showed hyaline membrane (not included in group 3 or table I).

TABLE I—RELATION OF VENOUS PRESSURE IN FIRST 6 HOURS OF LIFE TO SURVIVAL

Pressure (cm.)	Died	Survived	Total
5 or below	8* (all premature)	7 (4 premature)	15
Above 5	0	10 (5 premature)	10

$p < 0.5$.

* 1 baby showed a terminal rise of pressure at the age of 25 hours.

Effect of Tipping in Abnormal Infants

6 babies with raised venous pressure were tipped, and in this position the mean of the pressures was + 0·7 cm. and the mean fall 6·5 cm. (range 4·4–9·5 cm.), compared with a mean fall of 4·9 cm. (range 3·1–7·1 cm.) in the normal babies.

In 14 abnormal babies with normal initial pressures the pressure in the tipped position was −2·0 cm. and the mean fall 5·2 cm. (range 1·5–0·6 cm.). The average initial pressure in this group was + 3 cm.

Discussion

From our recordings of mean venous pressure in normal babies in the first hours of life it appears that 95% lie within the range + 0·2 to + 5·0 cm. of 5% dextrose (mean 2·6 cm.). These figures are lower than those cited in the past. Birth-weight and age within the first 18 hours of life do not appear to influence the mean venous pressure. In all the infants who were tipped the venous pressure was reduced.

40% of infants with respiratory difficulty in the first 6 hours of life had a venous pressure outside the normal range. The unexpected finding, however, was that, in fatal cases, which were all in premature babies, the mean venous pressure was within the normal range; and conversely all the babies with a raised mean venous pressure, of whom half were premature, survived. This suggests that a raised mean venous pressure is beneficial to an infant with respiratory difficulty in the first hours of life.

TABLE II—CAUSES OF DEATH IN 8 INFANTS PRESENTING CLINICALLY WITH RESPIRATORY DIFFICULTY

Birth-weight lb. oz.	Sex	Initial pressure (cm.)	Time of reading (hr.)	Cause of death	Time of death (hr.)
3 13½	F	3·1	5	Intracranial birth trauma; pulmonary syndrome (hyaline membrane)	39
4 8¾	F	4·5	2	Intracranial birth trauma; pulmonary syndrome (hyaline membrane)	34¾
4 3	F	4·3	3¼	Pulmonary syndrome (hyaline membrane)	28¾
2 2½	M	1·0	4	Previability, persistent fœtal epithelium in lungs, and resorption atelectasis	91½
4 4	M	1·8	1¼	Pulmonary syndrome (hyaline membrane)	29
4 0	F	1·1	3	Pulmonary syndrome (no necropsy)	44
1 9	F	4·3	4¼	Pulmonary syndrome (pulmonary hæmorrhage)	40½
2 2	M	5·0	5	Intraventricular hæmorrhage; resorption atelectasis	18

If a raised mean venous pressure is beneficial to a baby with respiratory difficulty in the first hours of life, it may be that the increased cardiac output dependent on the increased venous pressure assists in the complete expansion of the infant's lungs.

In those abnormal infants who were tipped, a greater fall in pressure was recorded than in the normal infants.

So it is clearly important that further work be done on this subject, because of its bearing on the position in which infants with respiratory difficulty are nursed, for it might be harmful to attempt to reduce venous pressure in infants with respiratory difficulty by nursing them tipped with the feet downwards.

Half the babies with the clinical syndrome of cerebral irritation were found to have a raised venous pressure, and in most of these the liver was clinically enlarged. It has been shown that in two-thirds of fatal cases of cerebral irritation the only pathological findings at necropsy were in the lungs. Bound et al. (1956) suggest that the cerebral symptoms in some cases of this syndrome are due to raised pressure in the cerebrospinal fluid secondary to raised venous pressure. The present findings support this view.

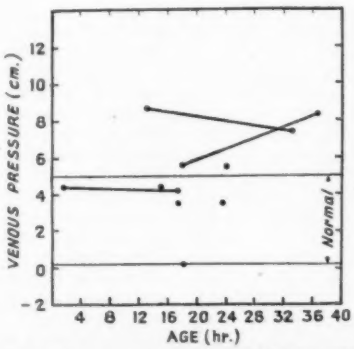

Fig. 6—Mean venous pressures in 8 babies with cerebral irritation.

In babies with erythroblastosis fœtalis we, in common with other workers, found a high initial mean

venous pressure. This was usually lowered by successful exchange transfusion. However, the 1 baby in the group that had a normal venous pressure and died is of interest because of the necropsy finding of hyaline membrane.

Summary

The mean venous pressure in 35 normal babies in the first 18 hours of life was between + 0·2 and + 5·0 cm. of 5% dextrose solution.

In 25 babies with respiratory difficulty in the first 6 hours of life 8 who died had normal pressures, whereas 10 of the 17 who survived had mean venous pressures higher than + 5·0 cm. of water. It is suggested that a raised venous pressure may assist in the expansion of the lungs of newborn babies.

Half the babies studied with the syndrome of cerebral irritation had raised mean venous pressures, and all but 1 of the infants with erythroblastosis fœtalis also had raised mean venous pressures.

We wish to thank all the staff of the Obstetric Hospital without whose coöperation this work would have been impossible, particularly Sister E. Edwards, who nursed the babies, and Dr. C. N. Smyth, who made the apparatus.

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LUPOID HEPATITIS

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THE discovery of lupus erythematosus (L.E.) cells in two patients with active chronic viral hepatitis has already been reported by Joske and King (1955). Five other patients with chronic hepatitis have since been discovered exhibiting this phenomenon on one or more occasions. We have not found L.E. cells in any other condition except classical disseminated lupus erythematosus (D.L.E.). The clinical and biochemical data from these seven patients indicate that they fall into a group resembling that of young females with chronic hepatitis described by Bearn et al. (1956). Study of this group has led to a concept linking certain types of active chronic hepatitis and lupus erythematosus, possibly through the common factor of disturbed immunological response.

The features of this group, defined as "active chronic hepatitis," have been described in detail from our unit by Saint et al. (1953), who noted its frequency in young females. These features include prolonged jaundice, pyrexial episodes, hepatomegaly and pronounced splenomegaly, spider angiomata, occasional ascites, a low serum-albumin level, a raised gamma-globulin level, positive flocculation tests, and a very high erythrocyte-sedimentation rate (E.S.R.). The diagnosis of active chronic hepatitis was confirmed by liver biopsy in each case. In five patients it was done at the same time as the test for L.E. cells. Considerable fibrosis and nodular regeneration were found in all. In three cases nodular regeneration was active and a striking degree of cellular infiltration was present. Two cases were submitted to liver biopsy before the L.E. cells were found. Active nodular regeneration and fibrosis was present in one, and both showed considerable cellular infiltration. The cell types were predominantly lymphocytes, plasma-cells, and histiocytes, which formed dense aggregates in some areas.

This group of cases has been provisionally designated as "lupoid hepatitis," since "lupus" has now acquired a far broader significance than the original term suggests.

Methods

The test used for finding L.E. cells was the two-hour clot test described by Magath and Winkle (1952). Biochemical methods have been previously described (Saint et al. 1953). The E.S.R. was read in a Westergren tube after one hour. Percutaneous aspiration biopsy of the kidney was done with a Franseen needle and by a posterior approach.

Case-reports

Case 1.—A housewife, aged 20, was first seen in April, 1953, with four days' history of cold shivers and headaches. She had had jaundice, nausea, and vomiting for a fortnight seven weeks previously. No contact history was obtained, and she drank no alcohol. Her previous health was good.

On examination she had slight icterus, a slightly enlarged liver, an impalpable spleen, and low-grade pyrexia. Biochemical investigations and liver biopsy (see table) gave results consistent with the diagnosis of subacute viral hepatitis.

Progress.—The jaundice deepened, amenorrhœa developed, and there was no biochemical evidence of improvement. Liver biopsy in June, 1953, showed severe active chronic hepatitis (see table). Bone-marrow showed eosinophilia without increase of plasma-cells. Cortisone 50 mg. daily was given for ten months from June, 1953. Liver biopsies in February, 1954 (fig. 1), and November, 1955, showed cirrhosis. L.E. cells were found in December, 1955. In May, 1956, the patient complained of lethargy, anorexia, and amenorrhœa. She had ascites, and albumin and granular casts were found in her urine. Bromsulphalein retention after 45 minutes was 38%. Kidney biopsy (fig. 2) showed thickening of glomerular capillary walls similar to that seen in D.L.E. Treatment with cortisone 50 mg. daily was started again in June, 1956.

Comment.—This young woman progressed from acute infectious hepatitis to active chronic hepatitis with biochemical and histological evidence of severe persisting damage to the liver-cells. L.E. cells were found, and there was evidence of a lupus lesion in the kidney.

Case 2.—A nurse, aged 21, was first seen in February, 1955. Five months previously she had contracted classical infectious hepatitis about three weeks after nursing patients with this disease. Deep jaundice persisted, but no evidence of obstruction was seen at laparotomy, and liver biopsy showed active chronic hepatitis. Loss of body hair and amenorrhœa subsequently developed.

On examination she had jaundice, slight obesity, liver edge 2 cm. below the costal margin, and slight ankle œdema. The biochemical findings (see table) were those of chronic hepatitis.

Progress.—A month later an erythematopapular eruption appeared on her face, and she had hepatic fetor and episodes of pyrexia. In March, 1955, L.E. cells were found and the E.S.R. was 102 mm. in the first hour. She improved after intermittent courses of aureomycin and vitamin B_{12}. In August, 1955, her jaundice disappeared, her menses appeared again, and her appetite and well-being returned. Her liver and spleen were enlarged, and spider nævi had appeared. Liver-biopsy findings in January, 1956, were unchanged.

Comment.—Acute infectious hepatitis was followed by severe persisting liver disease with hepatic fœtor and an erythematous facial rash; L.E. cells were found in association with a high E.S.R. The patient slowly improved, the E.S.R. fell, and L.E. cells were no longer detected.

Case 3.—A woman, aged 29, was first seen in May, 1952, with five months' history of epigastric pain, nausea, and vomiting, and one month's history of jaundice. She had had

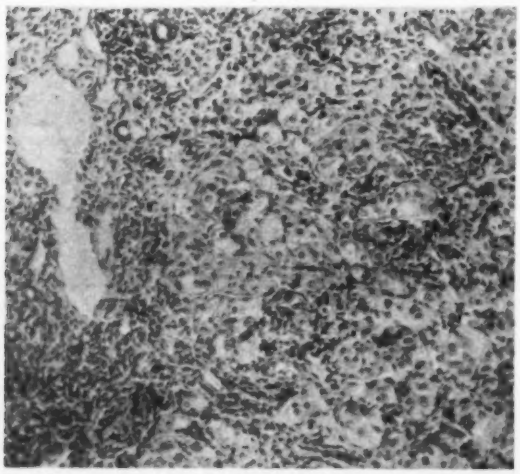


Fig. 1—Case 1 : liver biopsy (February, 1954) showing intense lymphoid infiltration and nodular regeneration of polygonal cells (× 150).

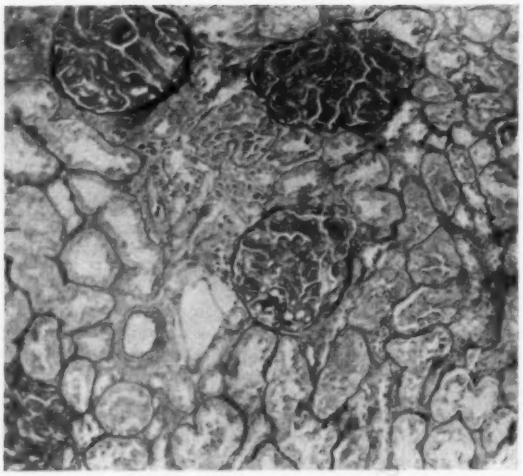


Fig. 2—Case 1 : kidney biopsy (May, 1956) showing thickening of capillary loops of glomeruli. (Periodic acid Schiff. × 150.)

jaundice twelve years previously, amenorrhœa, and spider nævi for three years, and abdominal swelling and weakness of her legs for several months. She had taken alcohol in excess and a very poor diet for ten years.

On examination she had jaundice, spider nævi, ascites, an enlarged hard tender liver, an impalpable spleen, and peripheral neuritis. Biochemical tests (see table) showed, in particular, a constant hypergammaglobulinæmia (2·2–3·6 g. per 100 ml.) and a persistently low prothrombin level. Bone-marrow biopsy showed a moderate increase (7%) of plasma cells. Liver biopsy (see table) showed active chronic nutritional hepatitis.

Progress.—Three episodes of hepatic coma occurred with recovery following sodium-glutamate therapy. Jaundice and biochemical evidence of liver dysfunction have persisted. The patient developed a cold-agglutinin type of hæmolytic anæmia in June, 1954, but the Coombs test remained negative. Cortisone was given for twelve months. In November, 1955, she had a small hæmatemesis ; ascites was present and both liver and spleen were considerably enlarged ; the patient's temperature was 99–100°F. L.E. cells were detected in December, 1955. In September, 1956, rheumatoid changes were present in both knees, and there was a pronounced erythematous rash on her face.

Comment.—An alcoholic woman, with severe hepatitis ; liver biopsy showed a nutritional rather than a viral hepatitis. Hæmolytic anæmia subsequently developed and L.E. cells were found. L.E. cells have not been found in our other cases of alcoholic cirrhosis.

Case 4.—A housewife, aged 66, was referred in November, 1955, with three years' history of hepatomegaly. Mild diabetes mellitus had been diagnosed eight years previously and controlled by diet alone. Her dietetic history was good, and she drank no alcohol.

On examination she had gross ascites and enlarged liver and spleen. Her urine contained a trace of albumin. The

FEATURES OF LUPOID HEPATITIS

Case no.	Sex	Age (yr.)	Date	Serum-bilirubin (mg. per 100 ml.)	Cephalin flocculation	Serum-albumin (g. per 100 ml.)	Serum-globulin (g. per 100 ml.)	Serum-γ-globulin (g. per 100 ml.)	Serum-alkaline-phosphatase (K.-A. units)	Prothrombin-time (% of normal)	Test for L.E. cells	E.S.R. (mm. in 1 hr.)	Liver		
													Parenchyma	Fibrous tissue	Cellular infiltration*
1	F	20	April, 1953	5·0	+ + +	3·6	5·5	3·4	21	49	..	80	Normal structure, cell necrosis, regeneration	Not increased	+ + +
			June, 1953	12·5	+ + +	3·3	6·0	4·2	25	45	..	..	Active nodular regeneration	+	+ + +
			Feb., 1954	1·7	+ + +	3·1	4·7	3·4	15	73	..	..	Active nodular regeneration	+ +	+ +
			Nov., 1955	3·2	+ + +	2·5	2·9	2·8	77	..	Positive	73	Nodular regeneration	+ + +	+
			June, 1956	1·1	+ + +	2·7	3·3	1·9	83	75	Negative	86	..	..	..
2	F	21	March, 1955	4·8	+ + +	2·3	4·4	3·7	22	50	Positive	102	Active nodular regeneration	+ + +	+ +
			Jan., 1956	3·7	+ + +	2·9	3·3	2·0	17	27	Negative	19	Active nodular regeneration	+ + +	+ +
	F	29	June, 1952	3·5	+ + +	2·8	4·4	2·0	8	64	..	..	Active nodular regeneration, accumulation of fat	+ + +	+ +
			April, 1954	12·5	+ + +	3·0	5·8	3·6	31	24	..	..	..	..	..
			Nov., 1955	5·6	+ + +	2·6	4·4	2·7	40	12	Positive	75	..	..	..
4	F	66	Nov., 1955	0·6	+ + +	2·3	3·4	2·1	17	100	Positive	106	Nodular regeneration	+ + +	+
			June, 1956	0·6	+ + +	3·0	3·2	1·8	12	..	Negative	..	..	..	..
			Aug., 1956	0·6	+ + +	2·1	2·8	1·4	10	36	Negative	129	Nodular regeneration (Necropsy findings)	+ + +	+
5	M	16	Jan., 1955	2·0	+ + +	3·2	4·2	3·0	27	64	Positive	..	Active nodular regeneration, giant multinucleate cells	+ + +	+ +
			July, 1956	0·6	..	3·6	4·0	1·8	33	75	Negative	37	..	..	..
6	F	75	Sept., 1955	8·8	+ + +	1·9	5·4	2·6	20	64	Positive	..	Active nodular regeneration	+ + +	+ + +
7	F	37	Nov., 1954	2·8	+ + +	3·4	5·1	4·3	17	100	..	..	Normal structure, cell regeneration	+	+ +
			Jan., 1955	1·5	+ + +	3·3	4·7	3·1	17	..	Positive	76	..	..	..
			May, 1956	0·2	+ + +	3·7	3·3	2·0	14	..	Positive	68	..	..	..

* Predominantly lymphocytes, plasma-cells, and histiocytes.

biochemical findings (see table) were those of severe hepatitis. L.E. cells were detected on two occasions in November, 1955. The E.S.R. was 130 mm. in the first hour. Prednisolone therapy was begun in December, 1955.

Progress.—The ascites recurred quickly after tapping. In August, 1956, laparotomy was done after an ovarian mass had been found. Shortly thereafter the patient developed hepatic coma and died.

Necropsy Findings

Carcinoma of the stomach, metastases in both ovaries; a coarsely nodular liver; and contracted kidneys were found. The histological changes are described in the table.

Comment.—An elderly diabetic woman, with chronic hepatitis of uncertain ætiology, who died after laparotomy for gastric carcinoma. L.E. cells had been detected. Microscopy of the kidneys showed nodular and diffuse thickenings of the glomerular capillary walls, but the mildness of the diabetic process suggested that an additional factor may have operated to produce the nephropathy.

Case 5.—A male grocer's assistant, aged 16, was initially seen in December, 1955, with eighteen months' history of upper abdominal pain, anorexia, tiredness, and poor exercise tolerance. He had never had jaundice. He drank no alcohol, and his diet was good.

On examination he was pale and stunted, with slight jaundice, small spider nævi; liver 3 cm. and spleen 4 cm. below the costal margin, and occasional hepatic fœtor. Liver biopsy and biochemical findings (see table) were those of severe active chronic hepatitis. A barium swallow showed minimal varices. L.E. cells were found in December, 1955.

Progress.—Treatment consisted of intermittent courses of tetracycline and vitamin B_{12}, and subsequently cortisone 100 mg. daily. In July, 1955, the patient's general condition had considerably improved, although the physical findings and biochemical data had not altered significantly.

Comment.—A male adolescent presented with active chronic hepatitis. L.E. cells were detected. Improvement followed cortisone therapy.

Case 6.—A woman, aged 75, was first seen in August, 1955, with five weeks' history of jaundice, umbilical pain, vomiting, and anorexia.

On examination she was obese and icteric with ascites and liver palpable 2 cm. below the costal margin, but no nævi. Liver-function tests (see table) revealed hepatocellular damage with hypergammaglobulinæmia (2·6 g. per 100 ml.). Liver biopsy showed severe active chronic hepatitis (see table). Many L.E. cells were found. The patient died after two months illness.

Comment.—This old woman died of active hepatitis lasting eight weeks. The cause was indefinite; many L.E. cells were found.

Case 7.—This patient, previously reported by Joske and King (1955), had chronic active viral hepatitis with one episode of hepatic coma, arthralgias, and intermittent fever. Cortisone therapy 25 mg. daily, began in January, 1955, was of benefit. A pregnancy was terminated in May, 1956, because of hyperemesis. Kidney biopsy in June, 1956, showed normal renal tissue. L.E. cells were consistently detected; the biochemical findings remain unchanged (see table).

Comment.—This patient has persisting active hepatitis with arthralgias but no evidence of renal impairment.

Discussion

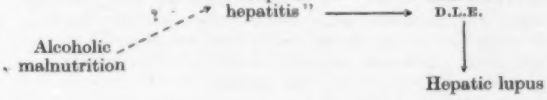
Joske and King (1955) reported the finding of L.E. cells in two patients with chronic active hepatitis. This study has been continued, and seven such cases have now been observed in this unit. Six were in females and the seventh in a boy aged 16. Five of the patients were aged between 16 and 40. In cases 1, 2, and 7 there was an initial illness closely resembling acute infectious hepatitis, and case 2 had had intimate nursing contact with acute infectious hepatitis. In case 3, a woman aged 29, the hepatitis was probably due to alcoholism and malnutrition; in cases 4, 5, and 6 the cause was obscure.

This group of patients presented in common the clinical features of chronic hepatitis—notably persisting jaundice, episodes of hepatic precoma or coma, enlargement of the liver, considerable enlargement of the spleen, and florid spider angiomata. All had strongly positive flocculation tests, hypergammaglobulinæmia, a very high E.S.R., and a low prothrombin level, often refractory to vitamin K. All the liver biopsies showed fibrosis, nodular regeneration, and foci of lymphocytes, plasma-cells, and histiocytes suggesting persisting liver damage. Apart from L.E. cells and other phenomena suggesting D.L.E. (arthralgias, rashes, hæmolytic anæmia, and nephropathy) most of the patients resembled classical lupus erythematosus in distribution of age and sex.

We therefore choose to call this syndrome "lupoid hepatitis" and regard this form of chronic hepatitis as related to D.L.E. Bearn et al. (1956) likewise consider that young females with active hepatitis represent a particular group; 11 of their 26 patients had arthralgias (as did cases 3 and 7). L.E. cells were found in only one patient in their series; they suggested that the occurrence of L.E. cells should be further investigated in this type of liver disease. A characteristic clinical picture seems to be created as a result of the activity of agents or processes which can damage the liver. These may include the virus of hepatitis, alcoholic malnutrition, and possibly the process basic to D.L.E.

Hepatic lesions occur in classical disseminated lupus but are seldom clinically obvious; moreover liver-function tests in D.L.E. are masked by concomitant serum-protein changes. Liver biopsy done on seven patients with classical D.L.E. showed evidence of mild liver damage in three. Harvey et al. (1955) reviewed 138 patients with D.L.E.: 35% of these had hepatomegaly; the bromsulphalein test was abnormal in five of sixteen; and three had cirrhosis of the liver. Evidence of hepatic dysfunction in D.L.E. was reported by Kofman et al. (1955). Honey (1956) described acute hepatitis with jaundice in a patient with established D.L.E. For convenience, such lesions occurring as part, usually a minor part, of classical D.L.E. may be called "hepatic lupus."

These concepts may be expressed diagrammatically as follows:



Joske and King (1955) explored the implications of L.E. cells in hepatitis. They suggested that the L.E. phenomenon, although a characteristic of D.L.E., merely indicated the existence of auto-antibodies to leucocytes, and could occur in any condition associated with the production of abnormal antibodies, either by the stimulus of a body component rendered antigenic in some way or by some anomaly of the antibody-producing mechanism. Thus the self-perpetuating nature of chronic viral hepatitis may be due not to the continuing presence of a virus but to an antigen-antibody disturbance, such as the following:

(1) The development of abnormal (and consequently antigenic) qualities in some component of the liver-cells as a result either of its modification by virus action (or conceivably by nutritional damage) or because pathological changes have made a component of liver-cells abnormally accessible to the antibody-producing mechanisms of the body; and

(2) The production of circulating or cell-borne antibodies which can damage liver-cells.

In terms of the self-marker theory of Burnet and Fenner (1949) viral or nutritional injury to the liver may

cause modified cells or tissue components not to be "recognised as self." Production of antibody against such components could be excessive, and its presence may be recognised clinically by splenomegaly, lymphoid foci in the liver, and hypergammaglobulinæmia, which were present in our cases. This process could also explain certain other manifestations which were occasionally present, including arthralgias (cases 3 and 7), hæmolytic anæmia (case 3), and membranous glomerulitis (case 1). Finally, L.E. cells were found in the blood in all these cases.

The Magath and Winkle (1952) clotted-blood technique used in this series is a well-accepted and reliable test for L.E. cells (Haserick 1956). More than 100 specimens of blood from various other patients in our unit were tested for L.E. cells with negative results, and the positive tests in hepatitis have been supported by other systemic manifestations of D.L.E. (cases 1, 3, and 7). Finally, the finding of L.E. cells in chronic active hepatitis is not confined to this unit (Sherlock 1955, Bearn et al. 1956, Spellberg and Cunningham 1956). The different tests used for detecting the L.E. cell vary in sensitivity, and no criteria exist for determining at what point they become specific for "classical lupus." The use of rigid anti-coagulant techniques (Marmont 1956) enhances specificity but would not detect the less strongly positive reactions which occurred in some of our cases of hepatitis.

We consider that immunological destruction of the host's liver-cells best explains the perpetuation of the hepatitis and progression to cirrhosis. If this is so, it would be rational to use therapeutic measures (e.g., cortisone therapy) designed to modify this process, and our experience suggests that cortisone is of benefit in this auto-immune hepatitis—lupoid hepatitis.

Summary

The syndrome of active chronic hepatitis associated with L.E. cells is described.

Viral and possibly nutritional damage to the liver can lead to a situation in which liver-cell components become antigenic either as a result of a change in antigenic pattern or because the pathological condition has brought them into an abnormal relation to the antibody-producing mechanisms of the body. They are not "recognised as self" and are consequently antigenic and stimulate the production of antibodies either circulating or cell-borne. These antibodies can react damagingly with liver and other body tissues, thereby leading to perpetuation of the hepatitis and occasionally to the initiation of lupus erythematosus. This process is provisionally called "lupoid hepatitis."

We wish to acknowledge that concepts expressed in this paper developed from discussions with Sir Macfarlane Burnet, and we are also greatly indebted to Dr. Ian Wood for advice and guidance. Miss S. Weiden and Miss F. Sparkes made the laboratory investigations, and Sister I. Langford gave nursing assistance. We wish to thank the medical staff of the Hospital, particularly Dr. W. M. Rose, Dr. W. E. King, and Dr. H. P. Taft.

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ACUTE INFECTIONS OF THE RESPIRATORY TRACT AND THE ADENOVIRUSES

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IT has been known since 1937 that some epidemics of acute respiratory infection clinically resembling influenza are not due to the influenza virus. The Commission on Acute Respiratory Diseases (1947) showed that it was possible to transmit an acute respiratory disease of this type in volunteers through nasal secretions and filtered garglings.

In 1954 workers in the United States showed that an epidemic of acute respiratory disease associated with some cases of primary atypical pneumonia was due to a virus of a hitherto unrecognised group. The epidemic occurred in an Army camp and the most prominent type of illness was a febrile pharyngitis (Hilleman and Werner 1954). The strain of virus was named RI 67. Sera obtained in the investigation made by the Commission on Acute Respiratory Diseases (1947) were tested with RI 67, and the results showed that either RI 67 or a virus related to it must have caused the infection in the volunteers (Ginsberg et al. 1955).

RI 67 was recognised as the prototype for type 4 of a group of adenoidal-pharyngeal-conjunctival (A.P.C.) viruses which possess a common soluble complement-fixing antigen, against which antibodies appear during infection with any one of all the types in this group of viruses (Huebner et al. 1954). So far more than 11 different serological types have been recognised among such viruses isolated from man (Rowe et al. 1956). The viruses have been recovered from surgically removed adenoids and tonsils and from patients with respiratory disease, conjunctivitis, and keratoconjunctivitis.

There is evidence that types 3 and 7 can cause febrile pharyngitis similar to that produced by type 4 (Berge et al. 1955). Type 3 appears to cause a characteristic clinical condition mainly affecting children; a widespread outbreak of this in a suburb of Washington, D.C., in 1954 was described as pharyngoconjunctival fever (Bell et al. 1955), which is a self-limiting febrile illness with pharyngitis as its most constant feature. Type 3 can also cause keratoconjunctivitis like that usually produced by type 8 (Fowle et al. 1955). Unilateral or bilateral conjunctivitis has been produced in volunteers by swabbing virus of types 1, 3, 4, and 5 on to the conjunctiva (Huebner et al. 1955). The discoverers of the viruses have now agreed to group them all under the title of adenoviruses (Enders et al. 1956).

The disease which is described as acute respiratory disease by American workers is clinically similar to that previously distinguished from influenza A in England and named febrile catarrh (Stuart-Harris et al. 1938, Commission on Acute Respiratory Diseases 1948). It seemed to us important to decide whether or not this non-influenzal respiratory illness occurring in the British Army was due to type-4 adenovirus. We also tried to detect infection with these viruses in civilians, both

children and adults, with febrile disease of the respiratory tract. Pharyngitis and conjunctivitis has not been described in epidemic form in Britain recently, but ophthalmologists recognise that acute conjunctivitis may quite often be associated with a sore throat in sporadic cases. We were fortunate in being able to study an outbreak in which such cases occurred, and to show that it was associated with infection by an adenovirus. We describe here the epidemiological pattern of adenovirus infection as we observed it and the various illnesses associated with adenovirus infection.

Laboratory and Clinical Methods

Most of the laboratory procedures used have been described elsewhere (Balducci et al. 1956). All the cases were tested serologically by complement-fixation tests for influenza A, B, and C and adenovirus. A positive result was recorded when a fourfold or greater rise in antibody level was observed in sera collected at the onset of illness and ten or more days later. Soluble antigens were used for tests for influenza A and B. Human kidney and liver cells (Chang 1954) and human amnion cells (Zitcer et al. 1955) were used for isolating the virus, and neutralisation tests were done in human liver cells (Chang 1954). Isolation of the virus in cultures of human epithelial cells was attempted with throat and nose swabs stored in a few ml. of sterile 50% milk-saline solution at −70°C.

The data were gathered in two investigations. In the first, sera were collected over fairly long periods between 1952 and 1955 from soldiers and civilians in Northern England with febrile respiratory disease. The results of the same tests on these sera were referred to previously (Zaiman et al. 1955, Balducci et al. 1956).

Results

Of 303 pairs of sera tested 42 were positive for adenovirus infection. The tests for adenovirus gave positive results mainly in small epidemics and occasionally sporadically. Fig. 1 shows that the virus ætiology of these acute respiratory infections was complex, and that, except at the height of an influenza epidemic, a virus infection was recognised in the laboratory in only a small proportion of these cases.

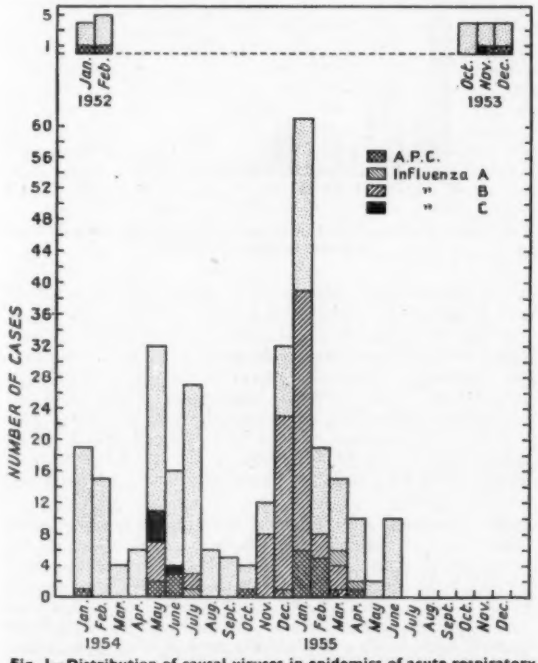
NUMBER OF CASES
A.P.C.
Influenza A
" B
" C
Jan. Feb. 1952
Oct. Nov. Dec. 1953
Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec. 1954
Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec. 1955

Fig. 1—Distribution of causal viruses in epidemics of acute respiratory disease. 3 cases of double virus infection (Nov., 1953, Dec., 1954, and March, 1955) are shown by vertically divided columns.

In reviewing these results we concluded that it was important to attempt to isolate adenovirus and other viruses from cases of respiratory disease other than influenza; so a second investigation was started for this purpose. In October, 1955, Northern and Western Command of the Army and the medical officers of twelve public schools agreed to notify outbreaks of respiratory disease. So far seven epidemics have been notified; four in the Army, and three in schools. Six were investigated. Three were apparently due to influenza A, two were associated with adenovirus infection, and in one no virus was found. The following clinical data relate to the 40 cases of adenovirus infection recognised in all these studies, and to a few additional cases.

The clinical data available varied greatly in the different groups studied. At one extreme only condensed clinical notes were available, and at the other there were complete hospital records, detailed daily symptomatic inquiries, and cases observed personally. Therefore it was impossible to describe outbreaks uniformly.

ACUTE RESPIRATORY DISEASE IN SOLDIERS

Catterick, 1952

Early in 1952 there was an outbreak of respiratory disease in this large garrison. Serum studies on 9 cases gave positive complement-fixation results for adenovirus in 2, of which 1 had a neutralising antibody response against adenovirus type 1 but not against types 2–6. Both patients had a febrile illness with pharyngo-tracheobronchitis, which was also found in cases in which the complement-fixation tests gave negative results.

Retford, Notts. Army Medical Reception Station, Ranby Moor, 1953–56. Isolation of adenovirus from cases of febrile catarrh in 1956

This station was in many ways representative of the units from which were drawn the cases treated at Chester Military Hospital and described in the next section. The cases studied included all the cases of febrile disease with respiratory symptoms which occurred in several small Army units in the neighbourhood. The population was about 700 and was composed mainly of National Servicemen with a proportion of regular soldiers. For a few weeks in the summer of 1954 a boys' training battalion was under supervision.

In the first wave of cases in the summer of 1954 influenza-C and adenovirus infections were recognised in boys from the military battalion just mentioned. In the following winter an epidemic of influenza B broke out, followed by numerous cases, of which most were negative on laboratory tests but some were either influenza-A or adenovirus infection.

In the spring of 1955 cases were seen from an epidemic of adenovirus infection which broke out in a training unit in Lincoln, where there were about 200 National Servicemen in the first few weeks of their Army training and 100 permanent staff. The recruits were posted abroad after a few weeks and replaced by new entries. These epidemiological conditions resembled those in which adenovirus infections have been found in the U.S.A., and an epidemic appeared which lasted for about two months and apparently affected many recruits, although only a fraction reported sick. Common presenting symptoms were malaise, nausea and repeated vomiting, and low pyrexia. In the next few days sore throat, a troublesome cough, and a hoarse voice developed. The tonsils were enlarged or somewhat reddened with small patches of yellowish exudate in some cases; β-hæmolytic streptococci were not isolated from throat swabs.

In view of this clinical picture, which closely resembled that of previous adenovirus infections in soldiers, adeno-

TABLE I—ANALYSIS OF SYMPTOMS AND SIGNS IN CASES OCCURRING AT MEDICAL RECEPTION STATION

—	Influenza B	Influenza C	Adenovirus
Total number	16	4	14
Pyrexia 101°F or more ..	16	3	4
Conjunctival suffusion ..	13	2	2
Nose affected	13	4	9
Throat affected	7	2	13
Larynx affected	3	1	11
Cough, chest pain, sputum	13	4	11
Signs in chest	1	..	2

virus infection was diagnosed. This was confirmed by serological results in almost all the cases, 11 of 15 cases being positive on complement-fixation tests. Adenovirus was isolated from the nose and throat of 2 of 4 patients in the epidemic. This virus was different from all of the adenovirus strains 1–11. Neutralisation tests with this virus on paired sera from cases in the epidemic showed five positive results (one in a case negative by complement-fixation test) and two negative results (both cases negative by complement-fixation test). Adenovirus type 3 was isolated from 2 of 3 patients who were tested late in the epidemic and from whom serum specimens could not be obtained.

In addition to the usual bedside notes a detailed proforma was completed regarding the symptoms and signs exhibited by each patient studied at the station. These were analysed in groups according to the results of laboratory tests on the patients' sera. The number of cases was small, but all the observations were made by three trained and interested observers and were recorded in a uniform manner. Some of the data are set out in table I to illustrate the clinical features which differentiated the cases from influenza-virus infections. The first differences between the cases infected with adenovirus and influenza-B virus were that in adenovirus infections the disease was milder, with less pyrexia, and constitutional symptoms and nasal obstruction or discharge were also less obvious. Throat involvement (persistent complaints of sore throat and objective redness) and hoarse voice, indicating involvement of the larynx, were more common in adenovirus infections. There was no remarkable conjunctival involvement in these outbreaks. Cough, chest pain, and abnormal physical signs in the chest, such as scattered râles and rhonchi, occurred with similar frequency in both groups. Infection with influenza-C virus was associated with a mild illness resembling influenza-B infection, but 1 patient developed a syndrome resembling infectious mononucleosis and was admitted to hospital.

Usually there was a rapid and uneventful return to good health after four or five days in bed and symptomatic treatment; but 1 patient with influenza-B infection showed a persistent pyrexia, without localising signs, which apparently responded to penicillin.

Chester Military Hospital 1954–55

This hospital admits patients from units of Western Command when they cannot be cared for in the unit medical beds. All cases of febrile disease with respiratory symptoms were studied serologically.

There were two outbreaks of influenza-B infections, one in May and the other in December, 1955. As the second outbreak was subsiding, a series of patients with positive results for adenovirus was admitted. Of 84 patients admitted and tested for adenovirus 15 gave positive results.

The clinical picture in most of the cases with serological results showing influenza-B infection was that of "typical" influenza as it occurs in the young adult, and influenza was often diagnosed on clinical grounds. The cases showing evidence of adenovirus infection tended to be milder and were more often diagnosed as having a "febrile cold."

7 of the cases were in officer cadets from a neighbouring unit, where about 400 were training. Other cases came from other units of Western Command but not from units far away. The history in most cases suggested that the illness had developed gradually. Most of the patients had pyrexia (101–103°F) and were mildly to moderately ill, and some were flushed. All but 3 patients had nasal symptoms with either obstructed airway or excess secretion of mucus or both. The organ most constantly affected was the throat. Every patient complained of sore throat, and in all but 1 the fauces appeared red; in 3 cases exudate was seen. In 5 patients there were enlarged cervical lymph-nodes. Although 13 patients had a cough and 10 produced sputum, only 3 complained of pain in the chest, and this pain consisted of retrosternal soreness. 2 patients had a hoarse voice. Pyrexia persisted for two to four days, and in most cases convalescence was rapid and uneventful. However, in some cases there were complications:

The most dramatic of these was in an officer cadet, aged 19, who, six days after admission for typical respiratory illness, developed meningococcal septicæmia and meningitis; he recovered completely after chemotherapy.

Another patient developed bilateral basal bronchopneumonia with leucocytosis, which apparently responded to penicillin.

In a 3rd case no abnormal signs in the chest were detected by physical examination, but faint bilateral basal shadows were seen on radiography, and a leucocyte-count showed 10,900 per c.mm. The lesions resolved rapid, as did a localised lesion of the right lower lobe in a 4th case. The latter lesion had been recognised on routine radiography, and the patient was already apyrexial on admission.

RESPIRATORY DISEASE IN CIVILIANS

Outbreak in Residential School for Boys

This outbreak occurred in late October and early November in a residential school for boys (Mount

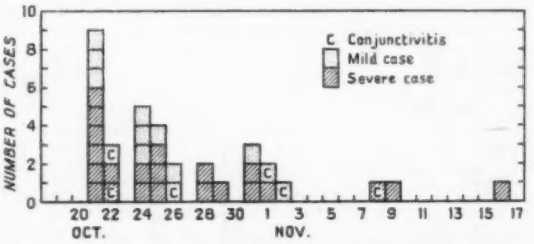

Fig. 2—Distribution of cases in outbreak of acute respiratory disease at Mount St. Mary's College.

St. Mary's College) situated ten miles south of Sheffield and housing 212 pupils aged 11–18. We were notified of the outbreak by Dr. A. H. Rankin, who is the general practitioner responsible for the school and had recognised an epidemic of respiratory catarrh associated with conjunctivitis. The outbreak began five weeks after the school had assembled for the autumn term. The distribution of the cases is summarised in fig. 2, which shows which patients were admitted to the school infirmary, which cases were mild or severe, and which patients had conjunctivitis.

The disease mainly affected boys in the junior classes. There were 26 cases in the 106 boys, aged 11–15, in the seven lower forms, and 19 cases in the 106 boys, aged 15–18, in the four upper forms. The onset was usually gradual, with symptoms of nasal obstruction and a little discharge and a sore throat. Malaise was the commonest general symptom, a few boys complained of generalised aches and pains or abdominal pain, and a few vomited. Anorexia was common for a few days. The degree of

TABLE II—DATA FROM SCHOOL OUTBREAK IN WHICH ISOLATION OF VIRUS WAS ATTEMPTED

Case no.	Main clinical features	Isolation of virus	Antibody titres	
			Complement-fixing	Neutralising
1	Headache and malaise, mild coryza	+	20/220*	<10/>40
2	Pale and "toxic," red throat, tonsils enlarged	+	<4/192	<10/>40
3	Malaise, mild coryza, and conjunctivitis, 2 fluid bowel motions, temp. 104°F	+	14/64	<20/>40
4	Shivering and mild coryza, red throat, and enlarged tonsillar glands	+	16/110	/>40
5	Sore red throat, temp. 103°F	+	<4/10	10/>40

* Reciprocals of titres are given. The first refers to acute-phase serum and the second to convalescent-phase serum.

illness was correlated with the extent of pyrexia in most cases, and the temperature rose above 103°F in 4 cases. One boy had two severe epistaxes.

In some mild cases there was less than 1°F rise in temperature and the symptoms were mainly mild nasal obstruction and discharge. Other boys seemed moderately severely ill. The nose was generally slightly moist and partly obstructed, and the throat was diffusely reddened. Some patients showed swelling of the tonsils or small patches of yellowish exudate on the tonsils; a few had slightly enlarged and tender tonsillar lymph-nodes. A peculiar tone of voice suggesting posterior nasal obstruction was noted in many boys. A few boys had a hoarse voice. There was no cough, and no abnormal physical signs in the chest were observed in any case. 1 patient with a high serum complement-fixation antibody titre had an attack of otitis media, which apparently responded to chemotherapy. 1 boy had recurrent and troublesome nausea and vomiting for more than a week, and abdominal examination revealed slight tenderness on deep palpation just below and to the right of the umbilicus. Another boy passed two fluid motions during a mild attack. The conjunctivitis occurred in 6 cases, was usually mild, and was accompanied by an excess of lacrimation or slight yellowish discharge. Vessels over the sclera were injected, and there was some œdema of the tarsal conjunctiva. The conjunctivitis was commonly unilateral and was associated with little or no respiratory or general illness in 4 cases. The boy with the most severe bilateral conjunctivitis was undergoing fitting for contact lenses at this time.

It was only possible to collect specimens late in the epidemic. However, these confirmed the clinical impression that this was an outbreak of adenovirus infection. Table II gives the results in some of the cases. Complement-fixing antibody levels in convalescence were uniformly high in the sera of 7 of the early patients, varying from 48 to 300 except for one of 24 in a boy with mild conjunctivitis. In the 5 representative cases a variant of adenovirus type 7 was isolated. Serum studies showed a rising titre of complement-fixing antibody. Neutralising antibody titres against the homologous virus rose, but titrations against adenoviruses 1–6 were negative in 2 cases tested.

Cases of this type were reported to be occurring in the general population, and laboratory studies were possible in 2 boys, aged 8 and 5, who came to hospital.

The first boy was admitted to the Children's Hospital, Sheffield, with pyrexia, sore throat, and conjunctivitis. He had a cough, and radiography of his chest showed partial collapse and consolidation of the left lower lobe. He recovered completely in 15 days. There was unequivocal evidence of adenovirus infection (complement-fixing titres rose from <4 to 1:256 and neutralising titres against A.P.C. type 7 from 10 to >1250).

The second boy had a febrile pharyngitis and a positive complement-fixation test.

City General Hospital, Sheffield. Bronchitis and pneumonia in middle-aged or elderly people, winter 1953–54

The patients, aged 40–70, came from Sheffield or its immediate surroundings and were admitted to the medical wards of this large general hospital. They were studied clinically during a therapeutic trial of antibacterial therapy in bronchitis and pneumonia, and the specimens of serum were collected for ætiological study.

Routine tests on 66 pairs had shown no positive results for influenza A or B or for psittacosis, lymphogranuloma venereum, or Q fever, but a few were positive for influenza C and adenovirus.

The patients were admitted after illnesses varying from a few days to several weeks. 2, with rises of antibody against adenovirus, were cases of acute exacerbation of chronic bronchitis, 1 of whom also had cor pulmonale. In 2 similar cases the patients had high levels of antibody (56) on admission and may have had recent infections. These patients produced a predominant growth of *Hæmophilus influenzæ* in their sputum. 2 cases of pneumonia showed very high titres for influenza C.

Negative Results in Civilians

No adenovirus was isolated from the nasal secretions of children with various acute respiratory diseases admitted to the Children's Hospital during 1955, or from the lung tissue of 9 patients dying from "virus pneumonia." No positive result was found in 40 cases of respiratory disease in students and nurses in Sheffield and Derby in the winter of 1955–56.

Discussion

On the whole our results confirm those of American workers. It seems that adenovirus infection occurs in association with human disease in a small proportion of cases of febrile respiratory illness. The clinical pattern in soldiers is identical with febrile catarrh or acute respiratory disease. Dascomb and Hilleman (1956) observed conjunctivitis in soldiers with acute respiratory disease apparently due to type-7 adenovirus; this suggests that, even in adults, this virus may affect the eyes. Dascomb and Hilleman saw no dramatic bacterial complications, but they gave all their patients oxytetracycline. They thought that the cough and the antibiotic were responsible for the nausea, vomiting, and diarrhœa which their patients developed; but, in the epidemic we observed, we think the gastro-intestinal symptoms were due to the virus. Our impression is that pathogenic bacteria were partly responsible for the clinical picture, at least in the more severe cases, as is apparently true in some complications of influenza (Tyrrell 1952). The lung lesions may perhaps be initiated by aspiration of mucus (Morle and Robertson 1953); they are not associated with an increase in cold agglutinins or in streptococcus-MG agglutinins (Hilleman et al. 1955).

Although adenovirus infection is probably quite common in the general population, at least in the younger age-groups, we have not regularly identified the virus in acutely affected children or in young adults, but we recovered viruses readily from surgically removed adenoids (Zaiman et al. 1955, Balducci et al. 1956). It seems that the normal patterns of clinical infection in childhood have yet to be discovered. Possibly the infection is subclinical or accompanied by a mild "cold." Perhaps, in some cases, alimentary-tract symptoms dominate the picture (Kjellén 1955).

Although type-3 virus was found in the first outbreaks of pharyngoconjunctival fever to be studied in the U.S.A., we recovered type-7 virus. Conjunctivitis can be produced by types 1, 3, 4, and 5. It therefore seems probable that, as in other virus infections, variations in the state of the host, the mode of infection, and the "virulence" of the strain may lead to a variety of clinical results, and that therefore any one clinical syndrome is not associated exclusively with one serotype of virus.

The localised epidemics which we saw may have been representative of other outbreaks elsewhere. B. E. Andrews and J. C. McDonald (personal communications) saw several epidemics of pharyngitis and conjunctivitis in 1955 in residential schools in the south of England and obtained evidence of concurrent infection with type-7 adenovirus. H. G. Pereira (personal communications) isolated type-7 adenovirus from cases of pharyngitis and conjunctivitis in Salisbury a few weeks after the similar epidemic which we observed. Andrews et al. (1956) found evidence of adenovirus infection in cases of respiratory disease in Royal Air Force stations in October, 1954. It is therefore possible that, in late winter and spring, 1955–56, there were periods of nation-wide increase in the prevalence of adenoviruses associated with respiratory disease and conjunctivitis.

Finally, we emphasise that we have seen cases of epidemic and sporadic respiratory disease which were clinically identical with those associated with adenovirus infections but in which there was no evidence of infection with adenoviruses or other agents. Much further work is required to determine the cause of such cases.

We wish to thank the many clinicians who allowed us to study their patients and their clinical records, in particular Lieut.-Colonel T. P. H. McKelvey, Captain A. R. Pate, Captain K. J. Dennis, and Lieutenant M. M. Sundle of the Royal Army Medical Corps, and Dr. F. J. Flint, Prof. R. S. Illingworth, and Dr. A. H. Rankin; Lieut.-Colonel T. G. A. Warrington, R.A.M.C., A.-D.-P. Western Command, for help with the collection of specimens; Brigadier G. T. L. Archer, director of pathology, for his interest in the investigation; Dr. J. C. Whitehead, for testing some sera for influenza viruses; the War Office for permission to publish certain data; Dr. H. G. Pereira for supplying specimens of adenovirus types 1–11 and one immune rabbit serum; and Prof. C. H. Stuart-Harris for help at many stages of this work.

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POST-GASTRECTOMY BILIOUS VOMITING

INVESTIGATED WITH BILIGRAFIN

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THE incidence of post-gastrectomy bilious vomiting is not high, but such vomiting prevents the patient from living a normal life, and a further operation is needed to try and cure the complaint.

Capper and Welbourn (1955) find that the frequency of bilious vomiting is about three times higher with a gastrojejunal than a gastroduodenal anastomosis. Composite figures calculated from the results of nine workers reveal a 3·5% incidence of mild and a 3·0% incidence of severe bilious vomiting after gastroduodenal anastomosis, and a 13·7% incidence of mild and a 9·6% incidence of severe bilious vomiting after gastrojejunal anastomosis.

The cause of bilious vomiting has not been determined.

Barium-meal investigation of the afferent loop after a gastrojejunal anastomosis is unsatisfactory because the loop often does not fill, probably because an attempt is being made to fill it from its distal end. We have studied the behaviour of the afferent loop with a contrast medium entering from the proximal end by means of intravenous cholangiography. The bile is rendered radio-opaque and can be studied on its passage through the afferent loop.

Technique

The patient was not specially prepared for the examination. 'Biligrafin Forte' 20 ml. was injected intravenously, and for two hours no food or drink was allowed. With the patient supine, exposures were made with an overcouch tube 30, 60, 90, and 120 minutes after the injection. 15 × 12 in. films were used so that contrast medium in the biliary and upper intestinal tracts could be seen. The patient was then given a meal, and further exposures were made 30 and 60 minutes later.

Fig. 1—Intravenous cholangiogram after satisfactory Polya gastrectomy, showing contrast medium flowing through afferent loop at 90 minutes.

Findings

Six patients who had had a satisfactory Polya gastrectomy were studied. Contrast medium filled the common bile-duct and gall-bladder and could be seen flowing into the duodenum and afferent loop in a continuous stream (fig. 1). The gall-bladder contracted normally after a meal.

Five patients who had had a similar operation but complained of postcibal bilious vomiting were next investigated. They were carefully selected. They complained only of bilious vomiting and were not greatly affected by the other postcibal symptoms collectively known as the dumping syndrome. The main symptom was epigastric discomfort which came on shortly after a meal and was relieved by vomiting bile unmixed with food. The following results were obtained :

Fig. 2—Intravenous cholangiogram of patient with bilious vomiting after Polya gastrectomy. Gall-bladder is very large, and no contrast medium can be seen in afferent loop at 120 minutes.

(1) In all five cases the gall-bladder became very distended but contracted after a meal as well as a normal gall-bladder (figs. 2 and 3). This was completely unexpected.

(2) In four of the five patients no dye was seen flowing through the afferent loop before the gall-bladder began to contract.

(3) The common bile-duct was not dilated.

(4) The afferent loop was not dilated.

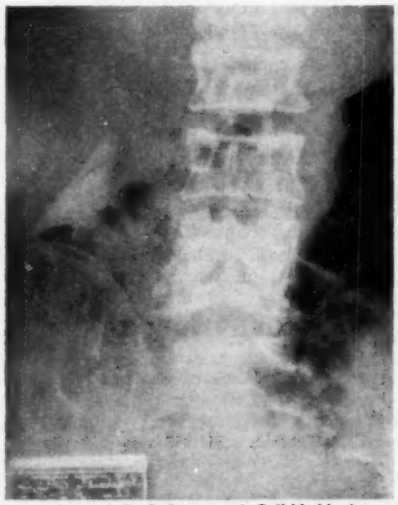

Fig. 3—Same patient as in fig. 2 after a meal. Gall-bladder has contracted, and there is contrast medium in afferent loop.

Fig. 4—Cholecystogram of patient before partial gastrectomy.

The intravenous cholangiogram in one patient who had had a partial gastrectomy 4½ years previously showed that the gall-bladder was not much distended, but comparison between this radiograph and a preoperative cholecystogram revealed an increase in size (figs. 4 and 5).

Discussion

In these five patients the gall-bladder is enlarged ; but, since it contracts normally after a meal, there can be no organic obstruction to the flow of bile. The absence of dilatation of the afferent loop shows that stasis in this loop is not the cause of bilious vomiting.

We make no attempt to explain these findings, but we suggest that the operation may have caused some functional abnormality in reflex activity of the gall-bladder. The relationship between the abnormality in biliary flow and the bilious vomiting is also difficult to determine. It seems as though the bile is prevented from entering the duodenum in a continuous stream either by spasm of the sphincter of Oddi or by loss of tone in the gall-bladder. The bile collects in the gall-bladder, overdistending it, until a meal is taken, when the gall-bladder is stimulated to contract powerfully and rapidly ejects its contents

Fig. 5—Intravenous cholangiogram of the same patient as in fig. 4 four and a half years after Polya gastrectomy and now complaining of bilious vomiting. Gall-bladder is larger.

into the afferent loop. This sudden flow of bile may enter the gastric stump and be vomited.

Among a hundred and ten patients with duodenal ulceration treated by vagotomy and gastro-enterostomy nine of thirteen patients classed as unsatisfactory results had bilious vomiting; in all these patients the vagotomy was complete (Holt and Robinson 1955). Wright (1952) stated that stimulation of the sympathetic nerves produced contraction of the gall-bladder, whereas stimulation of the vagus had no effect. Johnson and Boyden (1943) found that, in the cat, division of the right vagus nerve considerably delayed emptying of the gall-bladder, and they postulated that vagal stimulation increased its tone. Boyden (1941), however, suggested that the autonomic nervous system had very little control over the function of the gall-bladder and the sphincter of Oddi in man, because adrenergic and cholinergic drugs do not influence biliary pressure, and electrical stimulation of the stomach does not inhibit the gall-bladder from emptying as it does in animals.

Many surgeons advise the conversion of a gastrojejunal to a gastroduodenal anastomosis to cure post-gastrectomy bilious vomiting. This is almost always successful and does not seem to lead to anastomotic ulceration. It is not an easy operation. Entero-anastomosis between the afferent and efferent loops will also cure bilious vomiting but may cause anastomotic ulceration because both the pancreatic secretions and the bile are diverted. Vagotomy done at the same operation may possibly prevent this.

The findings in the present cases suggest that it is possible to cure bilious vomiting by anastomosing the gall-bladder to the efferent loop. This would prevent over-distension of the gall-bladder and should not lead to anastomotic ulceration, because the pancreatic secretions are not diverted. Ascending cholangitis would be unlikely to develop if the anastomosis was done by the Roux-en-Y method or with an entero-enterostomy. This operation should be easier than the conversion of a gastrojejunal to a gastroduodenal anastomosis.

Insufficient cases have been studied for any definite conclusions to be reached. This brief series may stimulate other surgeons to investigate their cases in the way described, so that more information may be obtained.

Summary

The behaviour of the afferent loop after Polya-type gastrectomy was studied by means of intravenous cholangiography.

In post-gastrectomy bilious vomiting the gall-bladder is enlarged but contracts normally after a meal.

We wish to thank Mr. R. Vaughan Hudson, Mr. R. S. Handley, Mr. C. J. B. Murray, and Mr. J. H. L. Ferguson, of the Middlesex Hospital, and Mr. H. G. N. Cooper of the Royal Surrey County Hospital, Guildford, for permission to investigate their patients.

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"... If every girl left school knowing how to lift and carry normal household weights with safety, whether shopping bags, buckets of water, or babies, very much later trouble would be saved. What a contrast we present to some of the Eastern and African races. Equally, if taught to perch on a stool or to stand at a sink of a suitable height on a sorbo mat or duck board, with her weight well forward on her toes, instead of carried with hollowed lumbar spine on her heels, she would be a happier middle-aged woman. The insistence on using a stool and a table made at a level suited to standing height, not to sitting at it on a chair, is now recognised and gradually coming into general use."—Dr. ANNIS GILLIE, *Research Newsletter* no. 12 of the College of General Practitioners, August, 1956, p. 95.

COMPOUND DISTURBANCE OF THE BONE-MARROW

(THE MYELOPROLIFERATIVE DISORDERS)

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THE well-recognised association between polycythæmia vera, myeloid leukæmia, and myelosclerosis was first postulated clearly by Vaughan and Harrison (1939). In the case described below all these conditions were present, but the polycythæmia was for a time obscured by vitamin-B_{12} deficiency. The combination of any two of the three conditions is well known. The incidence of true leukæmia in cases of polycythæmia is about 5%, this figure relating mainly to death from leukæmia:

Reference	*No. of cases of polycythæmia*	*No. of cases of polycythæmia and leukæmia*
Abbatt et al. (1954)	27	0
Lawrence (1955)	231	16
Stroebel et al. (1951)	180	9*
Minot and Buckman (1923)	15	3
Scott (1953)	36	0
Harman et al. (1955)	48	1
Videback (1950)	125	3
Wiseman et al. (1951)	108	1
Tinney et al. (1943)	168	17
	938	50 (5%)

* Also 7 died from "anæmia associated with leukæmoid reaction."

The incidence of the "leukæmoid" blood picture in patients with polycythæmia is less easy to assess. Stroebel et al. (1951) cite 32% and Tinney et al. (1943) 16·6% (28 of 168 cases).

Polycythæmia and myelosclerosis in combination have been described by Hirsch (1936), Rosenthal and Bassen (1938), Vaughan and Harrison (1939), Thompson and Illyne (1940), Hutt (1950), Wyatt and Sommers (1950), and Beattie and Withey (1953). Marson and Meynell (1952) showed that myelosclerosis occurred in polycythæmic patients without relation to X-ray treatment.

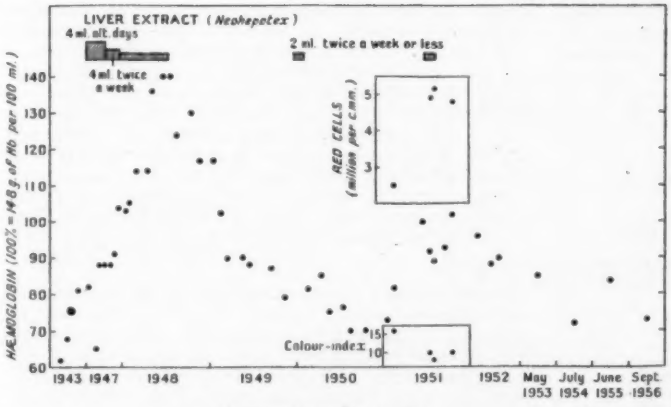
The occurrence of fibrosis of the marrow in myeloid leukæmia has been reviewed by Hutt et al. (1953), and further described by Richardson and Pinniger (1953), who conclude that "the leukæmias, polycythæmia vera, and myelofibrosis were all variants of progressive disorders stemming from the primitive mesenchymal cell, the pattern depending on the predominant cell types and stage of development involved."

As there is variation in the predominating manifestations of the marrow disorder, so also there is variation in the order in which these appear. Early in the history of polycythæmia it was noted that patients developed either leukæmia or an obscure failure of the marrow associated with leuco-erythroblastic anæmia, which was later related to myelosclerosis, but instances have also been reported of polycythæmia appearing spontaneously in leukæmic and in myelosclerotic patients (Windholz and Foster 1947, Hutt 1950, Beattie and Withey 1953).

A distinct increase in the number of red cells after the administration of liver to myelosclerotic patients is also reported (Avery 1930, Stone and Woodman 1938, Vaughan and Harrison 1939). Three patients who apparently had pernicious anæmia and became polycythæmic after having injections of liver extract are of interest in relation to the case described below (Birnie 1936, Galt et al. 1952, Skouby 1952). A comparable case but without the complication of vitamin-B_{12} deficiency is reported by Hutt et al. (1953, case 4).

Case-report

A woman, aged 53, was admitted to hospital in February, 1943, complaining of tiredness, headache, and loss of appetite.


LIVER EXTRACT (Neohepatex)
4 ml. alt. days
2 ml. twice a week or less
4 ml. twice a week
HAEMOGLOBIN (100% = 14·8 g. of Hb per 100 ml.)
RED CELLS (million per c.mm.)
Colour-index
1943 1947 1948 1949 1950 1951 1952 May 1953 July 1954 June 1955 Sept. 1956

Hæmoglobin levels, 1943–56

Before the gradual onset of these symptoms she had enjoyed good health. She had an enlarged spleen and 3,120,000 red cells per c.mm., Hb 53% (9·16 g. per 100 ml.*), colour-index 0·85, leucocytes 4900 per c.mm. (polymorphs 71%, lymphocytes 22%, monocytes 2%, eosinophils 4%, mast cells 1%), considerable poikilocytosis and anisocytosis, some polychromasia, no nucleated red cells, and platelets within normal limits. She was apparently regarded as a case of Banti's disease and underwent splenectomy and a blood-transfusion. A month later she had 4,040,000 red cells per c.mm., Hb 70% (12·1 g. per 100 ml.), leucocytes 19,500 per c.mm. (polymorphs 77%, lymphocytes 19%, monocytes 4%), and normal platelets. A section of her spleen re-examined in 1951 showed fine fibrosis and intrasinusoidal erythropoiesis, which was regarded as characteristic of myelofibrosis.

She remained in moderate health until August, 1947, when I saw her as an outpatient complaining of weakness, faintness, pins-and-needles in her hands and feet, painful legs, and a sore tongue. Apart from pallor no gross abnormality was observed, and her blood showed 2,320,000 red cells per c.mm., Hb 70% (12·1 g. per 100 ml.), colour-index 1·52, much macrocytosis, numerous normoblasts, and occasional megaloblasts—appearances characteristic of pernicious anæmia. She was thought to have pernicious anæmia with degeneration of the spinal cord. Treatment with 'Neo-Hepatex' 4 ml. on alternate days was started. A fortnight later she had 2,680,000 red cells per c.mm., Hb 56% (9·7 g. per 100 ml.), colour-index 1·05, leucocytes 47,900 per c.mm. (polymorphs 59%, lymphocytes 21%, monocytes (? metamyelocytes) 11%, eosinophils 9%). The diagnosis of pernicious anæmia was abandoned, but injections of liver extract were continued once or twice a week.

After a month she had 4,400,000 red cells per c.mm., Hb 75% (12·97 g. per 100 ml.), colour-index 0·88, leucocytes 83,000 per c.mm. (polymorphs 74%, lymphocytes 10%, eosinophils 10%, monocytes 1%, neutrophil myelocytes 3%, metamyelocytes 2%), normoblasts 4 per 100 leucocytes, occasional macrocytes, moderate anisocytosis, many hypochromic forms, polychromasia in excess of normal, platelets well in excess of normal, and numerous giant platelets.

By December, 1947, her symptoms were greatly relieved, and she had 5,600,000 red cells per c.mm., Hb 88% (15·2 g. per 100 ml.), and in other respects a very similar blood picture. Shortly after this she was admitted to hospital with epistaxis, and the number of liver injections was decreased to one a fortnight.

By August, 1948, her red cells reached 7,250,000 per c.mm., Hb 106% (18·3 g. per 100 ml.), leucocytes 90,000 per c.mm., including myeloblasts 7%, myelocytes 11%, and metamyelocytes 2%. Enlargement of her liver (already noted) had now reached her umbilicus. Her face was plethoric and she had great discomfort in her hands and feet. A histamine test-meal showed an absence of free hydrochloric acid, and sternal puncture produced a fluid identical with peripheral blood. No treatment was given, and her symptoms gradually subsided. By October, 1948, she had 4,900,000 red cells per c.mm., Hb 110% (19 g. per 100 ml.), and leucocytes 70,000 per c.mm., including myeloblasts 0·4%, myelocytes 6·4%, and promyelocytes 3·6%.

Progressive anæmia then ensued, and by November, 1949, she had 2,500,000 red cells per c.mm., Hb 79% (13·8 g. per 100 ml.), colour-index 1·6. The leucocyte picture was unchanged. Inspection of the film did not suggest that the colour-index was so high as reported, but the cells were abnormally large. The nucleated-cell count was similar to that of eight weeks previously—i.e., 54,000 per c.mm. (normoblasts 75%, erythroblasts 25%). With great reluctance the patient submitted to further injections of liver extract and improved somewhat, but the anæmia persisted until, after further injections in June and July, 1951, she had 4,800,000 red cells per c.mm., Hb 102% (17·6 g. per 100 ml.), 12% nucleated red cells, and 76,000 leucocytes per c.mm.

She has received no further liver extract since that time, and her blood has remained fairly stable; in May, 1953, it showed red cells 4,000,000 per c.mm., Hb 85% (12·6 g. per 100 ml.); in June, 1955, red cells 4,800,000 per c.mm., Hb 83% (12·3 g. per 100 ml.), leucocytes 118,000 per c.mm. (myelocytes 12·8%); in September, 1956, Hb 86% (11·8 g. per 100 ml.), with occasional macrocytes, leucocytes 90,000 per c.mm. (myeloblasts 3%, promyelocytes 4·5%, neutrophil myelocytes 22·5%). The platelets showed much variation in morphology, and giant forms were seen.

During the period of observation the sternal marrow, a spinous process, and an iliac crest were punctured, all of which provided fluid identical with the patient's blood. Dr. M. R. Thomas reported on a biopsy specimen from an iliac crest (1955) as follows: "The marrow between the bony trabeculæ is largely replaced by fibrous tissue; one small island of hæmopoietic tissue is seen in which there is a fibrosis, and in a few places these cells are scattered in the fibrous tissue; the appearance is that of myelosclerosis." In 1952 the vitamin-B_{12} level in the blood-serum was low (total 45 $\mu\mu$g., combined > 16 $\mu\mu$g.). The accompanying figure shows the changes in Hb levels.

In September, 1956, the patient was readmitted, with superficial thrombophlebitis of the left leg. While recuperating from this she developed a typical gouty swelling over the second metacarpophalangeal joint of her left hand, the uric-acid level in her blood being 5·7 mg per 100 ml.

Comments

The association of myeloid metaplasia with gout is well recognised. Videbaek (1950) records gout in 9% of 125 cases of polycythæmia. Stroebel et al. (1951) found that the level of uric acid in the blood was above 6 mg. per 100 ml. in 27% of cases of polycythæmia. Hickling (1953) concludes: "Gout occurs much more commonly in patients with myeloid metaplasia involving erythroblasts, leucoblasts, and megakaryocytes than in patients with typical myeloid leukæmia or with typical primary polycythæmia."

In retrospect this patient was myelosclerotic at the onset of her illness in 1943. Treatment for vitamin-B_{12} deficiency five years later revealed polycythæmia. Throughout the years her leucocytes have increased progressively, and she is now leukæmic, and her platelets show giant forms. Meanwhile the number of her red cells remains normal without treatment.

Summary

A case is described in which myelosclerosis, polycythæmia, myeloid leukæmia, and vitamin-B_{12} deficiency have all been demonstrated between 1943 and 1956, and the patient, a woman, now aged 67, lives in moderately good health. It illustrates the basic unity of the first three of these conditions and shows that myelosclerosis and leukæmia are not merely terminal phases of polycythæmia, although they may be the more lethal elements

* During 1950 the method of estimating hæmoglobin was changed from the acid-hæmatin method (100% = 17·3 g. of Hb per 100 ml.) to the National Grey Wedge (100% = 14·8 g. of Hb per 100 ml.). The value of hæmoglobin in grammes has been adjusted accordingly.

in a disorder in which one or other may predominate during a part, or the whole course, of the disease.

I record with pleasure my appreciation of help and advice given by the pathologists who have done so much work for this patient: Dr. E. Wordley, Dr. M. R. Thomas, Dr. J. O'Brien, and Dr. H. Greenberg; and my thanks to Mr. W. B. Waterfall who did the biopsy.

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DRUG TREATMENT OF ENURESIS

CONTROLLED TRIALS WITH PROPANTHELINE, AMPHETAMINE, AND PITUITARY SNUFF

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ABOUT half a million English school-children are said to wet their beds regularly (Bransby, Blomfield, and Douglas 1955, Blomfield and Douglas 1956). This large number reflects our ignorance of the cause of this disturbing symptom and our failure in treatment. For many years various drugs have been given with some apparent success; but none has been found useful in all cases, and the indications for their use have not been clearly defined. The fact that many children improve with nothing more than encouragement has led some writers to suggest that the success obtained with any drug depends chiefly on the enthusiasm with which it is prescribed.

Material and Method

This study concerns 88 children who were referred by their family doctors because of bedwetting, and who were seen as outpatients at the Sheffield Children's Hospital. Their ages ranged from 4 to 14 years. None had ever been dry except for a very occasional night. Table I shows the number in each age-group and the trials in which they participated.

Before a child was accepted into the study, his history was taken in detail, he was examined, and his urine was tested. Those with symptoms or signs indicating a lesion of the urinary tract were not included in the investigation. Advice was given to the parents about the management of their children, and they were asked to maintain a constant routine during the period of study. A chart of the wet and dry nights was to be kept either by the parents or by the child himself. A prescription was then given; and the hospital pharmacist dispensed either an active or a placebo preparation according to a system designed to provide random samples. Enough was given to last for four weeks. At the end of this time the patient was seen again, and a note was made of the number of wet beds and of any other comments made spontaneously. Those who had received the placebo were now given four weeks' supply of the drug, and vice versa. On the next visit a note was made of the number of wet beds, and of any spontaneous comments, and the parents were questioned about toxic signs during the two periods. Until the end of the investigation nobody except the pharmacist knew the order in which the active and placebo preparations were given.

The Drugs

Propantheline ('Probanthine') was given because of its anticholinergic action. A dose of 60 mg. (four tablets) was given when the child went to bed. The placebo tablets could be distinguished from the active tablets only if the latter were retained in the mouth for a long time, when the sugar coating dissolved and the bitter taste of the propantheline became apparent. The periods of treatment with "active" and placebo tablets could be distinguished in retrospect in the few cases showing toxic effects; but the difference was not noticed by the patients.

Amphetamine sulphate was given to lighten the depth of sleep. A dose of 10 mg. (two tablets), or in a few cases 20 mg., was given at bedtime. Sometimes side-effects showed that a child was getting amphetamine rather than placebo; but the tablets appeared identical.

Posterior-pituitary snuff ('Di-sipidin') was used to reduce the volume of urine formed during the night. The potency of each capsule of snuff was 30 antidiuretic units. The snuff was inhaled into the nose by means of an insufflator so simple that most of the children could use it themselves. In the initial trials one capsule was given at bedtime. In later trials two capsules were given at bedtime or one later than bedtime (i.e., when the parents retired). No patient detected any difference between the snuff and the placebo powder.

Observations

The results for each drug were assessed in two ways. Firstly, the total number of dry nights when taking the drug was compared with the total when taking the placebo. Secondly, the results during the drug and placebo periods were compared in each case

The 88 children participated in 171 trials. 43 of the 88 children received a placebo preparation as their first form of treatment, and 16 of them (37%) reported improvement with the placebo (6 had between 8 and 14 dry nights and 10 had between 15 and 21 dry nights).

Table II shows that in some trials there were more dry nights with the drug than with the placebo, while in others there were more dry nights with the placebo than with the drug. In only 17 trials, however, did the difference amount to more than 10 dry nights in the four

TABLE I—THE NUMBERS OF CHILDREN AT EACH AGE AND THE DRUG TRIALS IN WHICH THEY PARTICIPATED

Drug			Age (years)										Total
Propantheline	Amphetamine	Posterior-pituitary snuff	4	5	6	7	8	9	10	11	12	13	14	
+	..	..	1	1	1	2	3	1	1	0	2	0	0	12
+	+	..	0	1	1	2	2	0	0	0	0	0	1	8
+	+	+	3	3	4	1	1	1	1	1	1	1	1	18
+	..	+	0	0	1	0	0	1	0	0	0	0	0	2
..	+	..	1	2	0	0	0	1	2	0	2	0	0	8
..	+	+	2	0	1	2	2	1	2	1	0	3	1	15
..	..	+	3	2	3	5	2	5	2	0	1	2	0	25
Total ..		..	10	9	11	11	10	12	8	2	6	6	3	88

TABLE II—THE NUMBER OF DRY NIGHTS WITH THE VARIOUS DRUGS

Drug	No. of trials	Total number of dry nights		No. of trials				
		Drug	Placebo	Over 10 more dry nights with placebo	Up to 10 more dry nights with placebo	Equal no. of dry nights with drug and placebo	Up to 10 more dry nights with drug	Over 10 more dry nights with drug
Propantheline (60 mg.)	40	400	408	0	18	6	16	0
Amphetamine (10 mg.)	38	476	364	0	13	2	16	7
Amphetamine (20 mg.)	14	174	143	0	6	0	7	1
Posterior-pituitary snuff (1 capsule)	56	655	494	0	14	4	32	6
Posterior-pituitary snuff (2 capsules)	13	148	110	0	5	1	5	2
Posterior-pituitary snuff (1 capsule at 11 P.M.) ..	10	104	66	0	5	0	4	1
Total	171	1957	1585	0	61	13	80	17

weeks; and in all of these the improvement took place during treatment with either amphetamine (8 out of 52 trials) or pituitary snuff (9 out of 79 trials). Details of the 8 children (9 trials) who had over 10 more dry nights with the snuff are shown in table III.

Of the 40 children taking propantheline, 7 reported side-effects (3, abdominal pain; 2, blurred vision; 1, a dry mouth; 1, nausea and vomiting), as did 17 of the 49 taking amphetamine sulphate (13, restlessness at night; 3, abdominal pain; 1, undue nervousness). No side-effects were noted by the children taking posterior-pituitary snuff.

Discussion

Nocturnal enuresis is so variable a condition that four weeks is probably the shortest period suitable for a trial.

TABLE III—DETAILS OF 8 CHILDREN SHOWING IMPROVEMENT OF THEIR ENURESIS IN 9 CLINICAL TRIALS WITH POSTERIOR-PITUITARY SNUFF

Name	Age (years)	Capsules		No. of dry nights in 4 weeks	
		No. given each night	Time given	Placebo	Snuff
Christine ..	10	1	8.30 P.M.	4	23
Roy	13	1	9.00 P.M.	11	24
Ruth ..	11	1	8.30 P.M.	11	23
John	13	1	9.00 P.M.	11	22
David ..	9	1	8.00 P.M.	4	22
Elaine ..	8	1	10.30 P.M.	2	21
Janet ..	8	2	8.00 P.M.	6	26
Brian ..	9	1	8.00 P.M.	0	11
.. ..	9	2	8.00 P.M.	3	24

In four weeks a difference of up to 10 in the number of dry nights might be accounted for by the natural fluctuation of the condition, and it was considered unwise to assess the value of drugs within this range.

Our finding that, of the 43 children who received a placebo as their first form of treatment, no fewer than 16 showed improvement, emphasises the necessity for controlled studies.

Propantheline.—Mayon-White (1956) found no benefit from small doses. Leys (1956) claimed that propantheline had a "limited but definite action in reducing the number of wet beds," but the figures are not impressive.

Of his severe cases, 16 children received propantheline for two weeks and achieved a total of 31 dry nights—i.e., the average number of dry nights per child was 1·9. Another group of 16 children received a placebo for two weeks and achieved a total of 19 dry nights—i.e., the average number of dry nights per child was 1·2.

In the present study the drug was not effective even in the large dose of 60 mg. nightly. As 7 of 40 children (18%) showed side-effects, higher dosage would be inadvisable.

Amphetamine.—Abnormally deep sleep is often suggested as a cause of enuresis (Ström-Olsen 1950, Lewsen 1950). As the depth of sleep cannot be measured, this hypothesis cannot be proved or disproved; but in our investigation 5 of the 8 children who improved with amphetamine had been made wakeful and restless at night. The mothers were pleased with the result because it meant less washing, but they were worried because their children were so tired in the morning. It would be unjustified to claim these 5 cases as cures of enuresis, and it is doubtful whether a drug should be given in doses so large that side-effects are produced in 17 of 49 children (29%).

Pituitary snuff.—The results obtained with posterior-pituitary snuff were more encouraging. It was given with an insufflator without difficulty or side-effects. 6 children out of 56 responded to one capsule of snuff at bedtime by showing a difference of over 10 dry nights. Of those children not responding to one capsule, 12 were in the trials with two capsules, when 1 responded, and 6 were in the trials in which one capsule was given at the parents' bedtime, but none showed a response. On the basis of these results I should estimate that up to about a fifth of children with primary enuresis would be expected to be helped by one or two capsules of posterior-pituitary snuff at bedtime. We could not detect in advance those children who would respond.

Possibly posterior-pituitary snuff is effective in the children who have relative nocturnal polyuria, as described by Poulton (1952), but such polyuria would not explain why these children wet their beds instead of merely wakening in the night with the sensation of a full bladder. Treatment may need to be continued for a long time as a form of replacement therapy. Marson's (1955) observations in adults suggest that long-continued treatment may be necessary. In the children we have treated it has been possible to withdraw the snuff after two, three, or four months' treatment, and the improvement has been maintained; but the follow-up periods are relatively short. The snuff may reduce the formation of urine at night to an amount which the bladder can tolerate, and by the time it is withdrawn the bladder may be better able to hold normal quantities.

Summary

Controlled trials of the treatment of enuresis in children with propantheline, amphetamine sulphate, and posterior-pituitary snuff are reported.

A single large dose (60 mg.) of propantheline at bedtime was not effective.

In 8 of 49 children improvement was noted with amphetamine sulphate (10 or 20 mg.) given at bedtime; but 5 of them were awake most of the night and were getting up to micturate. The incidence of side-effects was high.

60 children participated in trials with posterior-pituitary snuff. No side-effects were observed. 8 showed considerable improvement, and probably some of the others were helped to a lesser degree.

I wish to thank Prof. R. S. Illingworth for his encouragement, and for allowing me to study patients under his care. Miss C. I. Crawford, hospital pharmacist, and her staff gave me valuable help.

I am grateful to G. D. Searle & Co. for the supply of 'Probanthine' (propantheline) and placebo tablets; to British Drug Houses Ltd., who prepared placebo tablets for the amphetamine sulphate trials; and to Paines & Byrne Ltd. for the supply of 'Di-sipidin' (posterior-pituitary snuff), placebo capsules, and insufflators.

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ENURESIS

ITS BACKGROUND AND CURE

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FAILURE of bladder control at night, after the age of 3, is one of the commoner habit disorders found in general practice. Usually, long before the patient is brought to the doctor, amateurish efforts have been made to cure his enuresis. It has caused frayed tempers in the parents, and deprived them of hours of sleep in their attempts to catch the child. Frustration and resentment have made them think that he is not trying, and could perhaps do better.

What is the conventional treatment of such a case? First, the child is prevented from drinking any fluids after tea (or even lunch), and, secondly, he is wakened in the night—once or several times, according to the endurance of the parents—and told to pass water. In other words he is subjected to deprivation and interference; and I believe that very often this deprivation and interference actually make his condition worse because they make it harder for him to gain control.

In saying this, however, I am certainly not recommending that nothing should be done. On the contrary, it is important to bring the bladder under control as soon as possible, which requires concerted effort by parents, child, and practitioner. To allow years to elapse waiting for the great healer, Time, to play his part, is wrong. Failure of control will lead to tension, loss of confidence, and apprehension as to each morning's awakening.

Types of Enuretic

These patients usually fall into one of two personality groups:

1. The timid and apprehensive—though often intelligent.
2. The madcaps or tomboys, overexerting themselves physically and mentally. These are often defiant and misinterpret attempts at control as lack of love.

Those in the first group awake, howling, immediately after wetting the bed. Those in the second group, having exhausted themselves, sleep deeply and do not awake till the morrow.

Some children have never acquired control: one or both parents, and often siblings, have been enuretics, and enuresis is expected of them too. Others have acquired control and lost it. Often they do this on the arrival of a second baby. The mother has scrupulously followed textbooks and had had the child trained and dry at 18 months; but, on the arrival of a second prospective wonder-child, control breaks down—which the mother takes as a personal affront. This group includes many nail-biters who have occasional lapses only. Control may be regarded as restraint and sacrifice, and the habit may be easily forgotten when there is a competitor for the mother's affection.

Management

Whichever group the patient falls into, the treatment is, in the main, the same. First, a physical examination is made to exclude organic disease. Personally, I have never found any, and I consider that the causes copied from one textbook to another, such as spina bifida occulta, vesical calculus, and phimosis, can be forgotten. If the urine contains no pus, albumin, or sugar, the case should be treated as psychogenic; but children with highly acid urine will profit from potassium citrate, in addition to the other methods recommended.

The next (and the most important) step is to discuss the situation openly with the child and both parents together. They are given a simplified explanation of the mechanisms involved, and suggestions are made as to future conduct.

Explanation to the Parents and Child

The bladder, I tell them, resembles a rubber balloon, partly filled with water. As urine passes into it from the kidneys, the muscular wall slowly stretches, and nervous impulses are sent to the brain telling it how much urine there is in the bladder—just as the needle of a petrol gauge shows how much there is in the tank. Our emotional state has a large effect on the state of the bladder. A sudden shock or fright may cause the bladder to evacuate; excitement—e.g., before a test at school—may cause us to pass small amounts of urine at short intervals. With children, at any rate, the same thing happens with joyful events, such as going on a holiday.

Just as a nervous apprehensive child may burst into a flood of tears when only mildly scolded, one who wets the bed is giving way to tension at the earliest possible moment. But anxiety about controlling the bladder may result in loss of control, just as anxiety about blushing may result in a blush. Anticipatory fearfulness of doing something wrong often causes that thing to be done wrong. Wanting to do a thing well, to put up a good show, may cause us to carry out consciously what is normally automatic. If we visit friends and want to show off our good table manners, we sit correctly and concentrate on our behaviour; the inevitable result is something spilt or shot off a plate. That is why the child who tries too hard not to wet the bed, and tries not to sleep in case control fails, inevitably becomes exhausted and the next moment is wet. Loss of confidence in one's own ability to hold out against the desire to micturate may be seen in people going to a cinema. Many make automatically for the toilets, though they have probably performed the same act but a few minutes previously. The fear of not being able to hold out has led to the very act.

One cannot emphasise too strongly to the parents that the desire to be dry is much greater in the child than in the parents. Being an enuretic is no bed of roses.

"In future," I say, "we will do without signs, gestures, bribery, and deprivation punishments of all types. Throw any calendar you may keep, to show the dry nights, into the waste-paper basket. There will be no whispering at the breakfast table, no lifted eyebrows or gestures of any kind, no frank praise like 'Your brother was a good boy last night,' to the other children, and no sighs at having again to wash the sheets."

Next we consider the home treatments to which the child has already been subjected.

"He has nothing to drink after teatime" brings the rejoinder from me, "What, no fluids at all—no drinks of any kind for thirteen or fourteen hours? Why, that is the worst thing you could possibly do. Having no fluids at all, his urine must become terribly concentrated, and this will make it most irritating. No wonder the lad has to wet the

bed so frequently. A small amount of highly concentrated urine causes more desire to evacuate than larger amounts of dilute urine. Think also of the psychological upset. His brothers and sisters are drinking but he is refused. What method could force more attention to his lack of control and make him feel more bitter and resentful ?

"What of the second treatment, the dragging of the child from his bed, half or deeply asleep ? Has that again produced a dry bed ? How many times has the child just pipped the clock ? It is much more helpful to encourage the child to hold his water for longer and longer periods through the day."

I explain that in exercising control, relaxation of the abdominal muscles and diaphragmatic breathing may help.

Talking to the child alone, I explain that the bladder has forgotten at night what it can do in the day. A little urine in the bladder leads to the impulse to empty it. It is misinterpreting its own messages; it is in a state of dither, and can't trust itself to react as it should. We must therefore correct its faults by training it to hold more water for longer and longer periods. I tell the child that whenever he feels the urge to empty his bladder, he must try to hold his water for as long as possible, so that the bladder gets accustomed to being full, and is not so eager to empty itself during the night. Drinking a lot will help the bladder to get used to holding a lot.

Régime

When these explanations have been given to the parents and the child, I tell them that he is to take plenty of fluid, such as orange squash, at bedtime, and I prescribe dexamphetamine sulphate, in doses over 20 mg. if need be, to prevent him from sleeping too deeply. Ephedrine gr. $^1/_2$ may also be useful for its sympathetic mimetic action. The dexamphetamine is continued for at least two weeks, and the extra fluid until the patient is dry.

Results

Of 8 cases treated in this way from the first, 8 responded dramatically outright and have been dry for as long as two years without relapse; in the other case the father would not attend for discussion. Of 20 cases previously treated by restricted fluids, wakening, belladonna, and small doses of dexamphetamine sulphate, 16 have been similarly cured.

I am conceited enough to attribute the failures to uncoöperative parents, and I hope all practitioners will try this method. Not only will they be pleasantly surprised by the results, and not only will the child be dramatically cured, but the country may be saved thousands of pounds otherwise to be spent on electrically controlled conditioning apparatus.

Illustrative Cases

Case 1.—A boy of the timid apprehensive type, an only child born in 1949. His father had had effort syndrome and nervous dyspepsia; his mother constantly made innuendoes about bedwetting but avoided open reference to the subject. His home conditions were poor, and he was not allowed to mix with the neighbouring children. In March, 1952, he was still not controlled. Restriction of fluids, awakening, and varying doses of amphetamine and other drugs, produced good results temporarily, but there were relapses. In September, 1953, the situation was explained to the child and his parents, and extra fluids were prescribed with 5 mg. of dexamphetamine sulphate nightly. Since this time he has not wet the bed.

Case 2.—A boy of 14, the second of five children—an example of the overactive type. The mother was timid and a poor manager though intelligent, and was bullied by the tyrannical selfish father, who had been an enuretic till the age of 14. The boy was very active at home and athletic at school. With fluids and 10 mg. of dexamphetamine sulphate at bedtime, he was cured overnight.

Case 3.—A boy of 6 who had never acquired control. He also had encopresis and frequency by day, with poor sphincter control and a highly excitable bladder reflex. The father had not achieved control till the age of 14, and deprecated the mother's attempts at training. When the father could be convinced of the need for coöperation, the boy immediately became dry at night with 15 mg. of dexamphetamine sulphate, but still had trouble in the day.

Case 4.—An intelligent cocksure girl of 5 who had been controlled at 18 months, but began bed-wetting after the birth of her sister. Her mother readily gave in to her, and her father, a salesman, was often away from home. She became dry immediately after discussion and therapeutic suggestions.

Summary

Enuretics fall into two main personality groups: (*a*) the timid apprehensive, and (*b*) the overactive. Their history reveals either a failure to learn control, or a regression, after learning control, to more infantile levels.

By their reactions to wetting the bed, one may distinguish (*a*) the soaker and waker, and (*b*) the saturated sleeper.

The conventional treatment of these children, by restriction of fluids and regular wakening at night, is wrong in theory and a failure in practice, and should be abandoned.

The method I advocate involves a full discussion with parents and child, and an explanation of the mechanism of micturition. Fluids are given in quantity, especially pleasant sugared drinks. Dexamphetamine sulphate is given for a time in doses sufficient to prevent the child from sleeping deeply.

Good results have been obtained in this way.

Preliminary Communication

DETECTION OF THE HETEROZYGOUS CARRIERS OF PHENYLKETONURIA

ELSEWHERE [1] we have reported the use of phenylalanine-tolerance tests for detecting carriers of phenylketonuria. 19 heterozygous carriers (parents of proved phenylketonuric patients) and 19 normal adult controls were given (by mouth, after an overnight fast) 0·1 g. of *l*-phenylalanine per kg. body-weight, and plasma levels of *l*-phenylalanine were determined one, two, and four hours later. At each estimation the levels in the heterozygotes were, on the average, about twice those of the controls.

We now describe observations made on such carriers without the use of a phenylalanine load.

Waelsch [2] studied the phenylalanine levels in the blood of 10 pairs of parents of phenylketonurics and found them essentially the same as those of normal controls. In view of the differences between the two groups which

1. Hsia, D. Y. Y., Driscoll, K. W., Troll, W., Knox, W. E. *Nature, Lond.* 1956, **178**, 1239.
2. Waelsch, H. Biochemistry of the Developing Nervous System. New York, 1955; p. 914.

TABLE I—DISTRIBUTION OF FASTING *l*-PHENYLALANINE LEVELS

Plasma levels (micromols per ml.)	Controls (no.)	Heterozygotes (no.)
0–0·025	5	0
0·026–0·050	6	1
0·051–0·075	7	5
0·076–0·100	14	12
0·101–0·125	1	12
0·126–0·150	0	4
0·151–0·175	1	2
0·176–0·200	0	1
Total	34	37
Plasma levels μM per ml.		
Mean	0·0671	0·1027
Standard deviation	±0·0316	±0·0292

TABLE II—FASTING *l*-PHENYLALANINE LEVELS ON DIFFERENT DAYS IN THE SAME SUBJECT

Subject	1st sample (μM per ml.)	2nd sample (μM per ml.)
Control	0·079	0·073
Control	0·066	0·073
Control	0·073	0·097
Heterozygote	0·097	0·121
Heterozygote	0·079	0·091

we observed when we used tolerance tests, it appeared worth repeating his experiment under specifically controlled conditions. Accordingly, plasma levels of *l*-phenylalanine were determined, after an overnight fast, in 37 parents of proved phenylketonurics and 34 normal adult controls, by a modification of the bacterial decarboxylase method of Udenfriend and Cooper.[3] The controls were chosen as being broadly similar to the 37 parents as regards age, sex, weight, surface area, and intelligence.

Table I shows that the plasma-phenylalanine levels of the two groups overlap considerably; but the difference between the means is significant ($t = 5{\cdot}25$; p less than 10^{-6}). Using this criterion alone, there would be a 30% chance of misclassification in two groups of equal size.

The test was repeated on several individuals in both groups on different days. Table II shows to what degree the results are reproducible. The amount of variation between repeated tests in one subject contributes a substantial part of the total variation within groups of normals and carriers: but this is not enough to invalidate comparison of the two groups.

The data add confirmatory evidence for the detection of heterozygous carriers of phenylketonuria, and suggest that the phenylalanine load merely brings out the differences between the two groups in a more striking manner.

We wish to thank Prof. L. S. Penrose and Dr. W. Eugene Knox for their kind help and advice, and the superintendents of Cell Barnes Hospital, the Fountain Hospital, and the Wrentham State School for referring the families to us.

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3. Udenfriend, S., Cooper, J. R. *J. biol. Chem.* 1953, **203**, 953.

Reviews of Books

Structure of the Ego

LOVELL LANGSTROTH, M.D. Stanford, Calif.: University Press. London: Oxford University Press. 1956. Pp. 149. 32*s*.

So thoughtful and painstaking a work as this demands respect. It is described on the title page as "an anatomic and physiologic interpretation of the Psyche based on the psychology of Otto Rank." It is therefore, except in its substitution of Rank's for better-known basic theories of human psychology, one of a long series of efforts to postulate the cerebral accompaniments and seat of mental happenings. The success of such efforts turns, not on the nicety of the parallel they draw, but on the philosophic position the interpreter takes up. Dr. Langstroth's position is implied in such a sentence as the following: "Normally a varying amount of feeling would emerge from Ammon's horn, join with the primitive will, and become a part of the conscious will (in the AV nucleus)." This easy transition from physical to mental concepts and back again bespeaks a fundamental weakness in the argument, elaborately though it is worked out. More informative is the recapitulation of Rank's theories, illustrated by diagrams and by a synopsis of the course of psychological events in patients the author had treated. The book is well written and admirably produced.

The Spine: Anatomico-Radiographic Studies

Development and the Cervical Region. LEE A. HADLEY, M.D., senior attending roentgenologist, Syracuse Memorial Hospital, Syracuse, New York. Springfield, Ill.: Charles C. Thomas. Oxford: Blackwell Scientific Publications. 1956. Pp. 156. 50*s*.

THE first third of this well-produced little volume is devoted to an anatomical and radiological description of development of the whole spine. In the remainder of the book Dr. Hadley considers the cervical spine. The illustrations are numerous and excellent. This book is well worth a place in departments concerned with trauma and orthopædics.

From Witchcraft to World Health (London: Lawrence & Wishart. 1956. Pp. 236. 21*s*.).—The history of medicine, from primitive man to the 20th century, is described in the first nine chapters of this book by Dr. S. Leff and Vera Leff. The last chapter looks forward to a future in which health problems will be dealt with on the lines of social medicine and the World Health Organisation. The two chapters on the Industrial Revolution paint a vivid picture of the horrible and unhealthy conditions under which the working-class used to live. Indignation at the system which produced these conditions has perhaps unduly coloured the views expressed about the amelioration of the lot of workers in the 20th century in lands where the capitalist has been eliminated as a source of social miasma. Some mention of the advances in medicine on the other side of the Atlantic might have counterbalanced the emphasis on the health measures on the other side of the Iron Curtain.

Technique du radiodiagnostic (2nd ed. Paris: Masson. 1956. Pp. 1148. Fr. 7000).—This work by J. Garcia-Caldéron and G. Ledoux-Lebard is one of the most complete textbooks on radiography. The introductory chapters deal with the production of X rays, X-ray apparatus, and the processing of radiographs. The bulk of the book is devoted to radiographic positioning. Every examination is described in detail, but beautiful line drawings make perusal of the text almost unnecessary. The chapters on contrast media are most helpful.

Vitamins and Hormones (vol. 14. New York: Academic Press. 1956. Pp. 486. $10.00.).—This latest volume in the series, edited by Prof. Robert S. Harris, Prof. G. F. Marrian, and Prof. Kenneth V. Thimann, contains eight articles. Olaf Mickelsen has contributed a methodical article on the intestinal synthesis of vitamins by the non-ruminant; and J. S. Lowe and R. A. Morton one on vitamin A, which deals mostly with its synthesis from carotene and the way in which it acts. Two studies of carbohydrate metabolism follow: the first on its regulation in isolated tissues (A. E. Renold, J. Ashmore, and Baird Hastings); the second on experimental hyperglycæmia not due to a lack of insulin (K. H. Shull and Jean Mayer). The wide scope of the articles is well illustrated by the next one, which is on insect hormones (Peter Karlsbn). G. A. Levvy reviews the relation of the hormones to glucuronide metabolism, and four workers from the Upjohn Company (S. H. Eppstein, P. D. Meister, H. C. Murray, and D. H. Peterson) discuss the microbiological transformations of steroids and how they may be applied to the synthesis of hormones. J. A. Loraine writes on the bio-assay of gonadotropins in relationship to clinical problems in man.

Whitaker's Almanack 1957 (London: Whitaker. Pp. 1188. 18*s*. 6*d*.).—New items include a list of 146 airfields available to civil aircraft in the United Kingdom, lists of 44 independent British and of 25 either Commonwealth or foreign air-transport companies working in or from the U.K., a list of 71 historic houses open to the public, and a section on hire-purchase in the legal notes. Tables of pay in the Services reappear after an absence of some years, and the parliamentary constituencies are rearranged alphabetically. Otherwise the contents cover the usual range of valuable facts.

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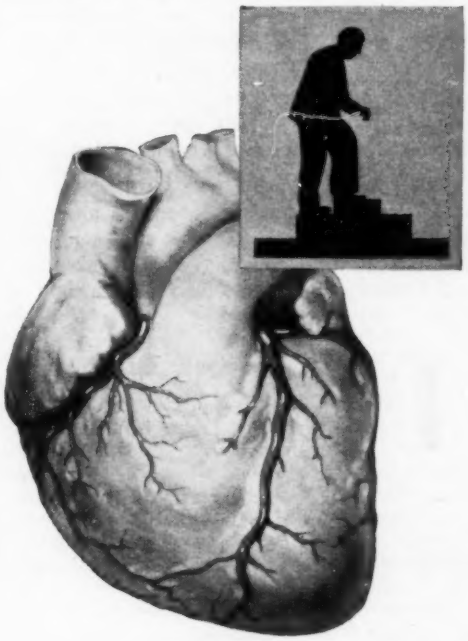

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Sarcoidosis

THROUGHOUT history, Lord COHEN has observed,[1] two ideas have dominated all writings on the nature of disease: there is the notion of disease as a distinct entity (when a healthy man, A, falls ill he becomes A plus B, where B is a "disease"); and there is the picture of disease as a deviation from the normal (a healthy man, affected by one or more of many possible influences, is changed and suffers—he is "dis-eased"). "Diseases" are convenient labels which help to classify narratives of illness; and if they were always so regarded it would be more rewarding, though less easy, to think about them. For instance, much of the confusion about sarcoidosis would disappear. SCADDING [2] has lately pointed out the important logical difference between the words "tuberculosis" and "sarcoidosis." Tuberculosis is best defined ætiologically, and to say that someone is "suffering from tuberculosis" implies that the phenomena observed are caused by the tubercle bacillus, which may fairly be said to have "attacked" the individual. But sarcoidosis can be defined only by description, and the statement that a person is "suffering from sarcoidosis" makes an assertion of a fundamentally different character. It asserts not that the phenomena have been caused by any known or unknown agent or environmental change, but that they resemble those which have previously been described as sarcoidosis, especially in respect of certain histological patterns: to speak of an "attack" of sarcoidosis is absurd. At present the definition of sarcoidosis cannot validly include a statement about causation, and it would not be illogical, therefore, to speak of tuberculous sarcoidosis. But to argue whether sarcoidosis *is* tuberculosis is neither logical nor worth while.

SCADDING [3] has defined sarcoidosis as "a disorder which may affect any part of the body, but most frequently the lymph nodes, liver, spleen, lungs, skin, eyes and small bones of the hands and feet, characterised by the presence in all affected organs or tissues of epithelioid cell tubercles, without caseation, with little or no round-cell reaction, becoming converted in the older lesions into a rather hyaline featureless fibrous tissue." Tuberculin sensitivity does not enter the definition. It is well known that patients with the clinical pattern and histological appearance called sarcoidosis may show all degrees of tuberculin sensitivity. A group of patients with sarcoidosis do, in fact, have a generally lower level of sensitivity than a comparable group of healthy individuals [4]; but a negative Mantoux test does not necessarily reflect complete absence of sensitivity. In some cases of sarcoidosis, reactions to tuberculin can be elicited by cortisone [5] or by depot tuberculin.[6] Moreover, some patients with tuberculosis (that is to say, patients in whom the tubercle bacillus can reasonably be said to be the cause of the illness) also give negative Mantoux tests. MASCHER [7] recorded 11 patients, and SCADDING has described another 4, with an indolent type of pulmonary tuberculosis, who failed to react to skin tests with 100 tuberculin units.[2] Of the 142 cases of sarcoidosis that SCADDING has analysed, no fewer than 14 have produced tubercle bacilli at some time or another.[3] In 10 the finding of bacilli was not accompanied by any clinical or radiographic change, and in 8 of these the skin remained insensitive to tuberculin. In 1 patient the bacilli were recovered from cervical nodes four years before the manifestations of sarcoidosis appeared; and in 3 they were found at a time when the radiological character of the disease changed and the skin became sensitive to tuberculin. A similar transition from a "sarcoid" phase to a "caseous" phase, with recovery of bacilli and change of skin reactions, has been described by LEES.[8]

As we have said before,[9] failure to find tubercle bacilli in the lesions of sarcoidosis is a major objection to the hypothesis that sarcoidosis can be a manifestation of tuberculous infection. But NETHERCOTT and STRAWBRIDGE [10] have now presented important indirect evidence of their presence. They demonstrated diaminopimelic acid (D.A.P.) and mycolic acid in tissue containing sarcoid lesions from 4 patients. D.A.P. has been found in *Corynebacterium diphtheriæ* and *Mycobacterium tuberculosis*, but never in normal mammalian tissue. CONSDEN and GLYNN [11] detected it in a caseous tuberculous nodule, a portion of non-caseous tuberculous lung, and a nodule from a patient with the Caplan syndrome of pneumoconiosis and rheumatoid arthritis; and NETHERCOTT and STRAWBRIDGE [12] found D.A.P. in 14 of 15 cases of progressive massive fibrosis. Mycolic acid is also present in virulent *M. tuberculosis*, being a constituent of the "cord factor." It cannot be a degradation product of human tissue because the molecule is much larger than any fatty acid normally present in the body. How much it is justifiable to infer from this new evidence of mycobacterial residues in tissue containing sarcoid lesions depends largely on the site of the lesions. It can be argued that lung and hilar nodes may contain residues from previous tuberculous infection and that the sarcoid lesions are therefore not necessarily caused by the bacilli. But the residues were also found in a skin lesion, and the chances against

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2. Scadding, J. G. *Tubercle, Lond.* 1956, **37**, 371.
3. Scadding, J. G. *Proc. R. Soc. Med.* 1956, **49**, 799.
4. Hoyle, C., Dawson, J., Mather, G. *Lancet*, 1954, ii, 164.
5. Pyke, D., A., Scadding, J. G. *Brit. med. J.* 1952, ii, 1126.
6. Seeberg, G. *Acta derm. venereol., Stockh.* 1951, **31**, 426.
7. Mascher, W. *Amer. Rev. Tuberc.* 1951, **63**, 501.
8. Lees, A. W. *Lancet*, 1951, ii, 805.
9. *Ibid*, 1956, i, 374.
10. Nethercott, S. E., Strawbridge, W. G. *Ibid*, Dec. 1, 1956, p. 1132.
11. Consden, R., Glynn, L. E. *Ibid*, 1954, i, 943.
12. Nethercott, S. E., Strawbridge, W. C. *Brit. med. J.* 1956, i, 1361.

co-existent but unrelated tuberculosis in the skin are very great.

Sarcoid lesions appear in some other systemic diseases—for example, chronic berylliosis,[13] chronic brucellosis,[14] and histoplasmosis.[15] But only some examples of berylliosis seem at present to come within the definition of sarcoidosis. To include in sarcoidosis, "dis-ease" caused by tubercle bacilli or beryllium is not irrational; nor is it confusing, unless we continue to believe in the anthropomorphic concept of "the independent self-sufficiency of diseases." [1]

Psychotherapy in General Practice

ALMOST every specialty of today began in a small way as part of the work of the general practitioner. The newer the specialty the more it should reflect the type of practice from which it came; but this does not always happen, and psychiatry is a case in point. In the 2nd John Matheson Shaw lecture of the Royal College of Physicians of Edinburgh Dr. C. A. H. WATTS [16] divides psychiatry into three "grades" of complexity and discusses the reaction of the family doctor to this one of the many specialties to which his work has given birth. How much psychiatry is practised by family doctors? Is it as little as it seems to be?

The routine of a consultation begins with listening as the patient's history is told, and making a clinical examination. These steps, either in the doctor's surgery or the patient's home, are by no means devoid of emotional content, as MEARES [17] has illustrated; and when advice or reassurance is added, with or without medication, rapport between patient and doctor has been built up—by nothing more or less than the practice of unacknowledged psychotherapy. The rapport situation is WATTS's first and most elementary grade of psychotherapy; but, because he uses each day new physical methods and techniques and powerful new remedies, the general practitioner may forget the impact of the treatment on the minds of his patients, and may only grudgingly admit that both his and his patient's confidence in it will add greatly to its potency.

If basic psychotherapy, the rapport technique, is practised unawares by the many, "second-grade" (but not second-rate) psychiatry is followed only by the few in general practice. Yet with its help, as HOPKINS [18] puts it, "the doctor can unquestionably get nearer the ideal of treating patients and not merely their symptoms." To attempt a reasoned assessment of the emotional disorder, arrive at a diagnosis, and undertake treatment with deliberate aimed psychotherapy is a distinct advance on the first "grade": it is no longer empirical, and it is in fact undertaken with efficiency and success (though, as RYLE [19] has lately remarked, with little recognition) by an increasing number of family doctors. They know that they are practising psychiatry as they work, though of course it is a different psychiatry from that of the specialist. For one thing, there is the important question of the right time to start psychotherapy; and BALINT [20] has pointed out how little the specialist knows about this problem—yet it faces the general practitioner almost every day. Few practitioners have had special training in psychiatry or psychotherapy, and many have learnt by trial and error how to help patients to regain their emotional balance. WATTS has illustrated how the range of mental illness which the general practitioner sees is also different from that of hospital or clinic practice: schizophrenia and other psychoses are rare; hysteria, anxiety states, and endogenous depressions are common. The family doctor, too, must live with the chronic psychiatric patients in his practice, as well as with those who have chronic organic disease. It is among them that he will find the patients—and he must recognise them correctly—who need the "third grade" of psychiatry; and these he will refer to a psychiatrist.

The proper management of mental illness (and it must be managed while we develop the means to prevent it [21]) requires more family doctors to learn their own "grade" of directed and reasoned psychiatry—and to be given the time in which to do it. (SNOWDEN [22] has described a short method of psychotherapy which aims at understanding and explaining the patient's symptoms, and which, he feels, is within the compass of all general practitioners.) But they and their hospital colleagues have much to learn from one another. At present even the nomenclature of mental illness differs between psychiatric clinic and general practice, and neither worker knows the background against which the other sees his patients nor the scope of his opportunity to help them. Means must be found, by postgraduate courses, informal meetings, and domiciliary consultations, to supplement improved undergraduate teaching. Each must learn and each must teach; for at present there is a danger that a third of psychiatry will remain unacknowledged, a further third wither from lack of support and teaching, while the rest becomes an esoteric mystery remote from the world of general practice.

Lungs of Foundry Workers

LUNG disease from dust has been a curse of metal workers from early times. In the 1st century A.D., PLINY mentioned that metal refiners wore bladders over their faces as a protection. During the 19th century the mortality amongst metal workers was surely at its highest, for a Sheffield grinder aged 30 was, among his fellows, an old man. His condition was vividly described by EBENEZER ELLIOT, the Rotherham poet:

> "There draws the grinder his uneasy breath,
> There, coughing, at his deadly trade he bends,
> Born to die young, he fears not man nor death,
> Scorning the future, what he earns he spends,
> Debauch and riot are his bosom friends.
> ...
> And, old at two and thirty, meets his doom."

In the past twenty-five years the pulmonary diseases of foundry workers have been much investigated; but, though some of the studies have included clinical

13. Hardy, H. L. *Amer. Rev. Tuberc.* 1955, **72**, 129.
14. Barrett, G. M., Rickards, A. G. *Quart. J. Med.* 1953, **22**, 23.
15. Pinkerton, H., Iverson, L. *Arch. intern. Med.* 1952, **90**, 456.
16. Neuroses in General Practice. By C. A. H. WATTS, M.D. Royal College of Physicians of Edinburgh Publications no. 6. Edinburgh: T. & A. Constable. 1956. Pp. 31. 3s. 6d.
17. Meares, A. *Lancet*, 1954, ii, 592.
18. Hopkins, P. *Ibid*, Sept. 1, 1956, p. 455.
19. Ryle, A. *Ibid*, Dec. 1, 1956, p. 1162.
20. Balint, M. *Ibid*, 1955, i, 683.
21. See leading article, *Ibid*, Nov. 24, 1956, p. 1087.
22. Snowden, E. N. *Ibid*, 1954, ii, 376.

examination, most of them have been mainly radiological, and few have dealt with post-mortem findings. Our most up-to-date knowledge of the lesions in the lungs is derived from detailed research, over many years, by McLAUGHLIN and his colleagues in this country. In 1950 they gave an account [1] of their clinical and radiological examinations of 2767 men in 17 foundries in which iron or steel, or iron and steel, castings were made. This included a complete review of the literature, a concise description of foundry processes, statistical analysis of the results, and environmental studies; but probably its most valuable part was the chapter based on post-mortem examination of 64 foundry workers. Unfortunately—possibly because it was not published in a journal but took the form of a book—this work does not seem to have had the attention it deserves. Perhaps this will be remedied now that McLAUGHLIN and HARDING,[2] have presented the findings at necropsy in a further series of 85 foundry workers. These augment and amply confirm the previous report. Pneumoconiosis is shown to occur in every foundry occupation, not only in sand and shot blasters, and in steel fettlers, who have long been known to suffer from it, but in others such as core makers, crane drivers, and pattern makers in whom the risk has usually been dismissed as non-existent. From a comparison of the later (1956) series, with the earlier one, the serious risk of silicosis in steel fettling does not seem to have abated, but there is reason to think that the stringent measures of dust-control in blasting operations have reduced the risk in sand and shot blasters; for not only were fewer cases seen but the average age at death had risen considerably.

Histologically, all stages of reaction to dust are found, varying from intra-alveolar phagocytosis to massive fibrosis. In many cases the individual lesion is the well-known rounded, whorled dense fibrous nodule of classical silicosis, but far more commonly a different kind of fibrotic reaction to dust is met with. In this the reticulin and collagen fibres are arranged in a linear or radial manner instead of in the characteristic whorl, and the nodule assumes a stellate or irregular shape. The authors term this lesion "mixed dust fibrosis." It is essentially similar to the lesion in the South Wales coalminers, and, like it, is usually associated with focal emphysema. These two types of reaction are in most cases distinct, but they often coexist in the same lung and there may be transitional types. Both types of lesion may progress to massive fibrosis. McLAUGHLIN and HARDING do not accept the view that massive fibrosis is always caused by infection with the tubercle bacillus. Its ætiology is indeed one of the unsolved problems of pneumoconiosis. DOIG [3] has lately suggested that the masses are formed by atelectasis of lung tissue between individual nodules, and this is supported by his observation that, at the edges of many fibrous masses, the outlines of individual nodules are still visible, tightly packed together.

In the 1956 series, fibrosis of the lungs was present in 90%, but was held to be an important factor in death in only 40%. McLAUGHLIN and HARDING draw attention to a high incidence of bronchial carcinoma, and discuss possible causes for this. Other important complications and causes of death were tuberculosis, pneumonia, and coronary thrombosis.

Chemical analyses of dried lung in cases of classical or modified silicosis are known to vary widely, and in individual cases they provide no more than suggestive evidence. McLAUGHLIN and HARDING show quite clearly, however, that, with increasing degrees of fibrosis, there is a general increase in the content of both free and total silica. The average iron content of the lungs was found to be some six times greater than quoted amounts for normal lungs; and this has a bearing on the contention of HAMLIN and WEBER,[4] supported by the animal experiments of VORWALD and his associates, that the nodular shadows in some foundry cleaning shop workers, such as grinders and burners, represent non-fibrotic deposits of iron dust. McLAUGHLIN and HARDING themselves, in their 1950 report, said that the lesions in furnace ladlers and labourers were possibly due to siderosis, but they have now found that the lesions are usually mixed dust fibrosis.

Step by step with the progress of our knowledge of dust disease in foundries have gone increasing efforts to suppress dust and make the work safer.

Much new legislation with this object has been introduced within the past eight years. The Blasting (Castings and Other Articles) Special Regulations, 1949, lay down special safeguards for the health of workers engaged in blasting castings, and in particular prohibit the use of sand as a blasting material. A similar prohibition against the use of siliceous parting powders is contained in the Foundries (Parting Materials) Special Regulations, 1950. The latest regulations, the Iron and Steel Foundries Regulations, 1953, came into force on Jan. 1, 1954, except for two requirements which did not operate until last January. The working of this code of regulations has been reviewed by H.M. Chief Inspector in his annual report for 1955 [5] just published. As regards the suppression of dust and fumes he records great improvement. Many difficulties (not yet entirely overcome) have been experienced in dealing with the knock-out, but there has been real progress. Most mechanised foundries now have exhaust ventilation applied at the knock-out position. In dressing and fettling operations the reduction and control of dust has been considerably improved, and, by separation of the processes the number of workers exposed to dust has been reduced. New designs have led to increased efficiency of exhaust appliances at pedestal and swing frame grinding machines, and the use of specially designed fettling benches with exhaust ventilation has increased.

All this makes encouraging reading, the more so since the Factory Department avoids complacency and puts its emphasis on the need for further research and experiments on dust suppression at almost all foundry processes. The reports of the Joint Standing Committees on Iron Foundries and on Steel Foundries [6 7] show how much detailed work has been done or is in hand.

1. McLaughlin, A. I. G., and others: Industrial Lung Diseases of Iron and Steel Foundry Workers. H.M. Stationery Office, 1950.
2. McLaughlin, A. I. G., Harding, H. E. *Arch. industr. Health*, October, 1956, p. 350.
3. Doig, A. T. *Brit. med. J.* 1956, i, 1484.
4. Hamlin, L. E., Weber, H. J. *Industr. Med.* 1950, **19**, 151.
5. H.M. Chief Inspector of Factories. Annual Report for 1955. H.M. Stationery Office, 1956.
6. Dust in Steel Foundries. Second report of a committee appointed to consider methods of preventing the production or the inhalation of dust and the possibility of reducing the use of materials containing free silica in steel foundries. H.M. Stationery Office, 1951.
7. Conditions in Iron Foundries. First Report of the Joint Standing Committee. H.M. Stationery Office, 1956.

Annotations

HOW BUSY IS THE FAMILY DOCTOR?

"BUSY" is now an almost automatic adjective for "family doctor" or "general practitioner." The bond between them amounts almost to hyphenation, so vividly does the public and the profession think of the general practitioner as a man bowed down by days and nights of ceaseless activity. He is credited thus, and perhaps accepts the implied compliment to his powers of endurance. Seldom does he deny that he is busy (at least publicly) for perhaps to him "being busy" has become something of a habit or a kind of defensive reaction.

Statistical studies of general practice have not so far shown in detail how the family doctor disposes of his working-time. This information could be obtained only from a general practitioner who was prepared to undergo a time-and-motion study of the kind more usually used as a guide to personnel management in industry. This has now been done, and Crombie and Cross [1] record the findings of a general practitioner who timed his own activities, stop-watch in hand, for a period of a year. The background to the figures might perhaps have been clearer, and no precise evidence is offered of how the estimate of the population at risk (4200 patients) was made. The time spent in the care of those patients was, however, analysed by season, age-group, and condition for which the patient was seen. Separate record was made of time in actual contact with patients, time spent travelling, and time consumed by the administrative tasks which are an often unacknowledged part of the efficient management and conduct of a practice. The practice was in a better-class suburban area with a relatively static population, and the figures may not be directly applicable elsewhere, but they show, perhaps for the first time, how busy a family doctor, practising under these circumstances, can be.

The time spent in contact with patients, travelling between them, and administration, was slightly over 30 hours a week throughout the year, varying from about 35 hours a week in the winter months, to a low level of 20 hours in August, when many of the patients of the practice were, no doubt, away on their summer holidays. Most time was spent on children and on old people, and most of the children in the practice were seen at some time during the year. There were some sex differences, particularly at older ages, which would repay closer study, though they reflect recognised differences in susceptibility to degenerative diseases.

This analysis, drawn first-hand from an efficient general practice, may suggest that the family doctor is less hard pressed than is often supposed. Since his skill is applied piecemeal, in long or short contacts with patients, he will often seem very busy to those who consult him. But more information could usefully be extracted before conclusions are drawn. How much time, for example, is consumed in one year by attendances for the ritual bottle of medicine? How busy is the doctor in a mining area, in consultations arising from bonus-shift certification rather than medical necessity? How far, in fact, could administrative and technical improvements in the manner and method of his practice, save him time and enable him to widen his vision and scope? This knowledge can come only from inquiries in other general practices.

Though some may be afraid of administrative efficiency in general practice on the false grounds that it detracts from humanity in some mysterious way, all must assume that a moral obligation rests on every family doctor to arrange and conduct his practice so that he may serve his patients best. For long visiting lists, overcrowded surgeries, and long weary hours of hurried work the practitioner can have himself to blame. Hours saved by proper organisation might enable the family doctor to play a fuller part in preventive medicine, the success of which would progressively relieve him of further burdens.

1. Crombie, D. L., Cross, K. W. *Brit. J. prev. Soc. Med.* 1956, **10**, 141.

PULMONARY COLLAPSE IN CHILDREN

THE Newcastle survey [1] showed that few children escape a more or less severe respiratory infection at least once a year; and figures from family practices [2 3] illustrate that respiratory disease accounts for a large proportion of visits, many of them to children. The mortality of respiratory diseases in early life is still considerable; 2373 children under 2 years were certified as dying of respiratory disease in 1954.[4] Our knowledge of these diseases is surprisingly inadequate and these disturbing figures are a stimulus to further efforts in prevention, investigation, and treatment.

Now that the pressure on hospital beds for children has been reduced, it is possible to look more closely at some common pædiatric problems. Such an investigation which throws much light on the common respiratory infections has been carried out by James and her colleagues [5] at the Princess Louise (Kensington) Hospital for Children. This hospital, serving a rootless and ill-housed population, admits each year a great many children who, except for bad living conditions, would be treated at home. James et al. have taken the opportunity to review the natural history of pulmonary collapse in childhood in a reasonably unselected group of cases. Of the chest films of some 5000 children, 854 showed evidence of pulmonary collapse as assessed by radiological diminution in size of one or more broncho-pulmonary segments. 55% of the children were available also for follow-up examination.

The results show that the most common antecedents of collapse were pertussis, upper respiratory infections, sinobronchitis (chronic paranasal sinusitis with recurrent episodes of bronchitis or collapse), pneumonia, and lower respiratory infections in that order. Asthma, tuberculosis, and measles figured much less frequently. Collapse due to measles, sinobronchitis, pertussis, and lower respiratory infection was often multilobular, whereas isolated lobar collapse tended to follow asthma, tuberculosis, and upper respiratory infections. The deflation of the lung in all these conditions was usually benign and transient. Bronchiectasis was proven in only 1·7%, but it was not looked for in the whole series. Persistent collapse was observed most often in tuberculosis, sinobronchitis, and pertussis. These differences may reflect different causes for the collapse (for example, aspiration, retention of viscid secretion, or obstruction by enlarged lymph-glands; but that is not certain. James et al. do not discuss the response to treatment.

It is important to realise that the common upper respiratory infections of childhood may be followed by collapse-consolidation in the lungs. This complication may explain the long convalescence and persistent winter cough of some children, and is an argument in favour of using X rays more freely. The lung apparently re-expands readily in most cases, but it would be valuable to have more information on what physiotherapy and antibiotics can do to hasten resolution. Bronchoscopy and bronchography are seldom indicated in the absence of striking symptoms or radiological changes [6] and they should be reserved for children in whom collapse has persisted for

1. Spence, J., Walton, W. S., Miller, F. J. W., Court, S. D. M., A Thousand Families in Newcastle upon Tyne. London, 1954.
2. Pemberton, J. *Brit. med. J.* 1949, i, 306.
3. Shaw, A. B., Fry, J. *Ibid*, 1955, ii, 1577.
4. Registrar-General's Statistical Review of England and Wales for 1954. H.M. Stationery Office, 1955.
5. James, U., Brimblecombe, F. S. W., Wells, J. W. *Quart. J. Med.* 1956, **25**, 137.
6. See *Lancet*, Oct. 13, 1956, p. 770.

more than three months or who are thought to have bronchiectasis. Children with recurrent respiratory disease, such as asthma or sinobronchitis, are liable to both recurrent and persistent collapse, which represents a real threat to their lungs and calls for adequate treatment of the primary condition.

The experience of James and her colleagues strengthens the view that sinobronchitis is a clinical entity; but a better name should be devised before "sinobronchitis" passes into acceptance through continued misuse.

ON GUARD AGAINST PLAGUES

WHEN the Fourth World Health Assembly adopted the International Sanitary Regulations in 1951 it was a legal rather than a hygienic innovation. From that date all nations who were members of the Assembly became bound by the regulations, and such member nations that wished to deviate from them in part or in whole had to submit their reservations to the Assembly. It may be a sign of the times that so little fuss was made over this victory for common sense over national prejudices. Since then the regulations have been modified in detail and will, no doubt, be modified again to meet new dangers or to remove useless impediments to commerce and travel. They are concerned with the "quarantinable diseases" only—plague, cholera, yellow fever, smallpox, typhus, and relapsing fever. In general they do no more than codify the many existing agreements, but in the process many obsolete procedures have been abandoned and the recommendations limited to what now appears sound and efficacious.

Even fifty years ago the medical officer of every port in the world knew that he was sitting on an epidemiological volcano. His first news of plague in Surabaya or smallpox in Bahia Blanca might be a ship in the roads with the yellow jack in her rigging or a dying man in his isolation hospital. Today patient clerks in Geneva sort and distribute a weekly return of infectious diseases from almost every country. The advances in the prevention and treatment of the pestilent diseases are as great as those in any branch of medicine. Active immunisation is effective not only against smallpox but against yellow fever and typhus, and (perhaps) against cholera and plague. Thanks to the newer insecticides the local extermination of mosquitoes is now a reality and the louse a very rare animal indeed. The rat survives, but new ships and more subtle poisons have drawn his teeth. That travel by air might bring with it the risk of spreading disease was readily appreciated, and no traveller can doubt that every care is now taken to avoid introducing undesirable aliens—with 2, 4, or 6 legs.

All these technical improvements have been accompanied by a remarkable and world-wide decline in the quarantinable diseases which goes a long way to justify the optimism of a recent review of the subject from the World Health Organisation.[1] Nevertheless a carefree faith in the certainty of continual and inevitable progress has led mankind into trouble before now and it would be foolish to forget that these diseases remain a danger so long as they are endemic in any part of this contracting world. Cholera today is almost confined to India, China, and the intervening countries. (It is hard to know whether India's place at the top of the table is a merited disgrace or the penalty of conscientious diagnosis and notification.) Cholera is a "simple" disease of which the cause and method of spread are well known; and yet, in spite of much thought and toil, the stimulus which converts endemic to epidemic infection is still a matter for surmise. In the future we may be able to confine the infection more closely than in the past, but the threat remains. No-one knows the origin of the outbreak in Egypt in 1947 and very few are certain why it ended when it did. Much the same is true of plague. The major epidemics have been more widely spaced than those of cholera, but they lasted far longer. It is still a sporadic disease in many parts of the world and endemic foci in wild animals are known in three continents. If we knew the chain of infection from a marmot in Turkestan to a million rats in the slums of Bombay we would be better placed to forecast our immunity from the pestilence. Vaccination against yellow fever gives a lifelong immunity. This by itself should be enough, but vaccination is a costly business and it is hard to justify the expense in a poor country where antibodies in the inhabitants' blood are the only evidence of the disease. In populous places it seems almost as effective to eradicate *Aëdes ægypti* (as has been done in parts of Brazil), but "jungle yellow fever" in monkeys and marmosets remains a threat of unknown potency. It is not entirely clear if the "wild" disease can give rise to the urban epidemic form: some slight evidence from Trinidad suggests that it might. At any rate, during the last few years jungle yellow fever has been advancing rapidly northward along the Central American isthmus: it may invade Mexico at any time and the U.S.A. is not outside the zone of danger if the disease is transmitted to *Aëdes ægypti* in the coastal belt.[2] Typhus and relapsing fever are diseases of war and at the moment we enjoy peace of a sort: in any case, the experience in Naples in 1943 suggests that louse-borne infection can be checked even in the middle of a war. Smallpox is everywhere less common than it was, and yet where doctors are few and money is scarce it is seldom absent. No doctor anywhere in the world can be quite certain that the next patient may not show a pustular rash which will cause him some hard thinking. This seems the disease most likely to be spread by air travel, but accurate diagnosis and sufficient vaccine should ward off a major epidemic.

It is equally a cause for thanksgiving that the combined wisdom of experts of all nations could be used in drafting these regulations and that the nations of the world accepted them with so little demur. At the moment they are sufficient, but the problems of disease are dynamic. Old diseases may assume new forms or new diseases appear to threaten us. The laws of the Medes and Persians are a poor model for medical legislation.

MEDICAL REFUGEES

SOME of the Hungarian doctors in this country need personal hospitality, as we said last week; but some now need—perhaps more than anything else—a little money. In supplying the physical wants of the thousands of refugees in their care, the British Council for Aid to Refugees provides pocket-money for all; but it cannot discriminate and give larger amounts to any particular group. To the professional people among them the small allowance they receive must seem almost negligible; and supplementary help is required to enable them at least to make small purchases of clothes, or to make necessary journeys. For such help towards restoring their sense of independence they should look particularly to their professional colleagues, and we are therefore opening a small fund to supply it. We ask other contributors to leave us discretion in the disbursement of what they send, merely assuring them that it will all be given to Hungarian doctors and their families as and when we ascertain their need for this kind of temporary support. Contributions may be sent to the Editor of THE LANCET at 7, Adam Street, London, W.C.2 (cheques being crossed "Hungarian Doctors Account").

Dr. W. G. BARNARD, professor of pathology in the University of London, dean of St. Thomas's Hospital Medical School, and treasurer of the Royal College of Physicians of London, died on Dec. 20.

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1. Gear, H. S., Deutschman, Z. *Chron. World Hlth Org.* 1956, **10**, 275.

2. Elton, N. W. *Amer. J. publ. Hlth*, 1956, **46**, 1259.

Special Articles

WORK AND RETIREMENT

INFLUENCES ON THE HEALTH OF OLDER MEN

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THIS study of the influences of work and retirement on the health and happiness of older men is based on 323 men who had attained the retirement age of 65 and were examined at the Rutherglen Consultative Health Centre for older people. Of these men 190 were married, 109 widowers, and 24 single; and 243 (75%) had retired from work and 80 (25%) were still in gainful employment. The age-distribution of the men was as follows:

Age-group (yr.)	*No. retired*	*No. at work*	*Total*
65–69	52	41	93
70–74	73	24	97
75–79	72	11	83
80–84	36	4	40
85 or more	10	0	10
Total	243	80	323

Social Status

The social status of the men, based on the classification of occupations of the General Register Office, was class I (professional) 14; class II (intermediate) 30; class III (skilled) 203; class IV (partly skilled) 22; and class V (unskilled) 54. It is useful to compare the 323 men in four groups: 89 (27%) who retired voluntarily from work; 71 (22%) who ceased work through ill health; 83 (26%) who were compulsorily retired; and 80 (25%) who were working at the time of the examination.

Reasons for Voluntary Retirement

The 89 men who retired voluntarily gave various reasons for doing so:

The work was heavy and beyond the physical capacity of the individual (30), or the mental strain of the work became intolerable and alternative suitable employment was not available (3); it was time he retired although he enjoyed his life's work and was fit to carry on (27); he was tired of work, and his finances were adequate (13).

Less common reasons were that he ceased work to stay in the home and care for an invalid relation (4); it was profitable to sell his business and retire (3); his wife made him stop (4); the temperature of the working environment was too low (2); he had no heart to continue working after the death of his wife (2); when his old employer died he could work under no other (1).

The heaviness or strain of work is a matter of importance when it is realised that 33 (37%) of the 89 who retired voluntarily did so because their work was beyond their physical or mental powers; that some of the compulsorily retired men who wished to go on working could not do so, because the only work available was too heavy, and that some of the men who ceased work owing to ill health might have been able to go on working within sheltered surroundings. Thus voluntary retirement may be in the nature of compulsion, owing not to the employer but to the character of the work. There is the implication that a serious frequency of maladjustment in industry exists between the older employees and the physical and mental demands of their employment.

Retirement through Ill Health or Accident

71 men retired because of ill health, of which the commonest causes were degenerative disease of the arteries (20), disease of the lungs (14), and accidents (10).

Of the 10 accidents 6 happened before the age of 65. One home accident, a fall down a flight of stairs, caused a fractured skull. Of 8 industrial accidents 5 caused fractures (leg, foot, ribs, metacarpals, and clavicle) and 3 injuries to the hands. The causes of the 10 accidents were falls (3); working tools or machine (3); vehicle (2); explosion (1); and a falling weight (1).

Although few, these accidents indicate that there is scope in industry for accident-prevention measures in relation to the older worker.

With older men ill health is an important factor in causing retirement. Of the retired group (243), 36 had ceased work between the age of 55 and 64; 130 between the age of 65 and 69, and 77 when over the age of 69. In these three groups ill health was the cause of retirement in 28 (78%), 27 (21%), and 16 (21%) respectively. The influence of ill health as a reason for retirement, which is significant in those retiring earlier than at the age of 65, is much lessened after the age of 64, and between the ages of 65 and 84 shows no significant change in incidence, accounting for about a fifth of the retirements.

This evident rôle of ill health as a major cause of retirement up to the age of 64 is an extension of the observations of MacPhail and Ferguson (1955), who note that disability assumes increasing importance as a cause of unemployment in older age-groups, and the opinion of Richardson (1953) that illness and injury are "trigger factors" in the move from heavy to lighter work.

Compulsory Retirement

Compulsory retirement (retirement at a fixed age-limit and being paid off at any age) ended the working lives of 83 men, of whom 5 were experiencing it for the second time. Of 25 other men, who secured alternative work when they were compulsorily retired, 13 were still working, 7 had retired voluntarily, and 5 had retired through ill health. Thus 108 (35%) of the 323 men had direct experience of compulsory retirement: 88 retired at a fixed age-limit, and 20 were paid off at variable ages, most of them in their late sixties or early seventies.

Only 14 (16%) of the 88 men who retired at a predetermined age were content with the situation. This opinion against enforced retirement of the fit worker is further emphasised by considering the men as a whole. Of the 323 men 289 (89%) believed that it was detrimental to the health and well being of older men; 23 (8%) considered it was a good thing to retire at a fixed age with pension; and 11 (3%) had no opinion. The reasons for this overwhelming dislike of enforced retirement of the older worker while he was yet fit were primarily financial and the need for older men to do something tangibly useful to give a meaning to their lives. Few men take kindly to society serving them notice that their services are no longer required.

Change of Occupation

Only 12 (3·7%) of the 323 men changed their occupations before the age of 65: 9 did so voluntarily, and 3 were sacked. There was therefore no difficulty for the men under review to retain their employment up to the normal age of retirement, provided ill health did not supervene. Ill health caused 26 men to retire before the age of 65. This finding is in agreement with Beveridge (1944), who believes that an older worker is no more likely than a young man to lose his job. He states that the adverse influence of advancing years is seen less when it is a question of retaining old employment than when it is a question of finding new employers.

45 (14%) of the 323 men changed their occupations late in life. The causes were enforced retirement in 30

(67%), voluntary reasons in 13 (29%), and ill health in 2 (4%). Of the 30 forced to retire 8 went to heavier work, 12 to lighter work, and 10 to work requiring about the same physical demands as their previous employment. The corresponding figures for the 13 men who changed voluntarily were 1, 5, and 7. The 2 with ill health went to lighter work.

It is difficult to estimate with accuracy the heaviness of work, but a practical index is obtained through the statements of the patient and the opinion of the observer. It seems that, when men are forced to retire, it is generally a matter of chance whether the subsequent work found is heavier, lighter, or much the same. Those who change voluntarily seem to have a better opportunity of finding suitable alternative work. This may be related to the fact that voluntary change tended to occur earlier than at the age of 65. Of the 13 men who voluntarily altered their work 8 did so between the ages of 55 and 62. New employers may look on such men with more favour than on those aged more than 65. For those who cease work because of ill health and wish to continue at work it is a question of finding lighter employment or not working at all.

The final occupations which these 45 men secured were watchmen, 13; jobbing gardener, 8; general labourer, 5; clerk, 5; and caretaker, 2; and joiner, sweeper, ticket-collector, waiter, barman, patrol crossing attendant, storeman, furnaceman, furniture-packer, cinema-doorkeeper, band-knife cutter, and van driver, 1 each. Thus 31 (69%) of the 45 men were absorbed into four occupations: watchman, gardener, labourer, and clerk. In a few of the occupations the men carried on work of the same type as they had done previously. This applied to some of the clerks and to the joiner, but for the large majority it represented a radical change. The number in unskilled or semi-skilled work is significant: of 23 previously skilled workers 12 became watchmen, 6 gardeners, and 5 labourers. It is a misfortune for skilled men, and for society, that to continue at work they must dissipate their activities on unskilled labour. It may be regarded as a wastage of human experience and skill.

Fundamental research is required into the feasibility of placing such skilled workers in the most appropriate jobs available, so that the individual's health is kept optimal, and maximal benefit is derived by society. Speed of performance can be an important factor in causing untimely retirement, and Welford (1953) suggests that older men can be successfully placed in work which requires care and accuracy rather than speed. There is insufficient work for all, and le Gros Clark and Dunne (1955) observed, in a study which excluded unskilled workers, that to save men retiring at the age of 65 about 40,000 alternative jobs must be found each year. This provision of suitable work for all may be rendered more complex in the future with the increased application of technical knowledge to industrial processes. Such progress may diminish the number of jobs available yet paradoxically favour the older worker by reducing the physical requirements of work, while the general enhancement of community health must permit men to go on working later in life.

Health of Workers

The assessment of the health of the 80 men who were working was revealing: 39 were in good physical health, but the 41 others were not. Of this latter group the common disabilities were degenerative disease of the arteries (16), disease of the lungs (10), and osteo-arthritis (5). It is thus evident that the fact that an older worker is in employment does not necessarily mean that he is in good health.

Help from Children

Of the 323 men in this series 64 (20%) had no children. This percentage is slightly lower than, but comparable with, the approximate assessment of 22% of all men in England and Wales with no children recorded by Titmuss (1955). As he rightly states, the evidence that there is a weakening of family responsibilities is meagre. It must be realised that about 1 man in 5 has no children to support him in time of need.

One aspect of filial responsibility which lends itself to accurate study is the extent to which children support their aged parents financially.

Of the 243 retired men 147 (60%) were not in financial difficulties. Of these 147 men 60 had an adequate income and/or an adequate capital. Of the latter, 5 (8%) received financial contributions from their children; 40 (67%) did not; and 15 (25%) had no children. This group of men was independent financially of children, and it was financially immaterial whether children existed or not. The 5 children who gave their parents money did so merely as one of their ways of showing the regard in which they held their parents.

Of the 40 men with an inadequate income and diminishing capital 23 received financial aid from their children, 6 did not, and 11 had no children. These 40 men faced future financial difficulties, but in 23 of them this unhappy future event was rendered less imminent through the financial aid given by their children. These old people could always approach the National Assistance Board when the need arose, but this was a course of action which did not appeal to many with an independent nature.

47 men with an inadequate income and no capital were financially secure only because their children gave them adequate financial aid.

Of the 96 (40%) retired men who were in financial difficulties with an inadequate income and meagre or non-existent capital 20 (21%) received financial assistance from their children, 52 (54%) did not, and 24 (25%) had no children. This group of men was significantly the largest receiving no financial aid from their children. Only a few of these children were apparently callous and indifferent to the misery of their parents. Most of them had insufficient income to cover their own family needs and that of their parents. Thus these children either could not give financial aid to their parents or, when they did, their help was inadequate.

Financial Aid from Work

The value of work as a means of maintaining financial security in old age is shown by the following facts.

Of the 80 men who were working only 1 considered that he was in financial difficulties, and he received no financial aid from his children. Of the 79 other men 56 received no financial assistance from their children, 14 had no children, and only 9 were given money regularly by their children.

The large majority of the men who were working were independent of outside aid and they were very happy that this was so. Many of the retired men, however, who received aid from their children were unhappy about the acceptance of money for one of two reasons: either they felt that their children really needed their own money, or they were embittered that their need for financial help indicated that they were losing their independence.

Other Reasons for Continuing at Work

36 of the 80 men who continued to work did so for reasons other than financial. An analysis of the opinions of the 323 men in this series revealed a variability in the older man's awareness of the meanings of work and retirement. Irrespective of social class all the men generally recognised that work enabled a man to earn a livelihood; to maintain a standard of existence with independence and self-respect; to pass the time of day usefully; and to develop social relations with their fellow workers. There was, of course, the occasional social isolate who made no friends at his work and regarded his working colleagues as tiresome and troublesome. There are other important meanings of work, the appreciation of which is correlated with the skill of the individual. The unskilled and partly skilled workers tended to regard their work as a means of earning a living. At the other end of the scale the highly skilled and

intellectual men were keenly aware of the non-financial meanings of work. They appreciated the happiness associated with a vocation; the satisfaction of prestige; the recognition of the value of their work by their fellow men; and the means for creative endeavour and self-expression. They valued the responsibility for personal work or the work of others; the new experiences of life arising from work; and the giving of service to others.

Happiness of Workers

The men who were working were significantly happier than those who were not: 7 of the 80 men in employment, and 52 of the 243 in retirement, were unhappy. The two groups showed common features causing unhappiness—e.g., grief over the death of a relation, ill health, the worry associated with the care of an invalid wife, and the influence of an adverse home environment.

Factors which applied significantly to retired men were loneliness in 20 (9%), the frustration of idleness in 6 (2%), and neglectful children in 3.

As regards the 243 retired men, age had no significant effect on general unhappiness, but loneliness was more prevalent in the 46 men aged more than 79 than in the 197 younger men, and the worry of being idle was found in the younger men, particularly those aged 65–69.

As regards marriage, 16 (12%) of the 131 retired married men were unhappy, compared with 32 (35%) of the 92 widowers, and 4 (20%) of 20 single men.

The significant causes of unhappiness in the widowers were loneliness and the loss of a near relation. Of the 20 lonely men 18 were widowers and 2 single, and of the 8 retired men who grieved over the death of a relation 7 were widowers and 1 was single.

Unhappiness increased with descent of the social scale: 4 (14%) of 28 men in social classes I and II were unhappy, 33 (20%) of 165 in class III, and 15 (30%) of 50 in classes IV and V. Thus unhappiness and discontent are particularly prevalent in men who are retired: from loneliness in those aged more than 80, those who are widowers, and those in social classes IV and V.

The causes of unhappiness in the 7 men working were ill health (3), the death of the spouse (2), the home environment (1), and the illness of the wife (1). 2 were married, 4 were widowers, and 1 was single. 1 was in social class II, 3 were in social class III, and 3 were in social classes IV and V. Of the 80 men who were working 59 were married, 17 widowers, and 4 single. Only 2 of these married men were unhappy and this was due to ill health.

Hobbies and Interests

Hobbies and interests in life other than work assume especial significance as men grow older. The frequency of these hobbies and interests in the 323 men in this series was as follows:

Interest or Hobby	*Number*
Religion	169 (52%)
Reading books	138 (43%)
Walks	129 (40%)
Wireless	119 (37%)
Community life	85 (26%)
Cinema or theatre	84 (26%)
Cards	84 (26%)
Football	79 (24%)
Gardening	73 (23%)
Playing or watching bowls	71 (22%)
Music	35 (11%)
Dominoes, draughts	34 (10%)
Television	29 (9%)
Golf	10 (3%)
Politics	7 (2%)

Rarer interests were photography, painting in oils or water colours, studying antiques and works of art, woodwork, watch-repairing, bird-watching, first-aid work, fishing, and wood-carving.

To assess the relationship between these interests and age, marital status, and social class, each attribute was regarded as a single unit, except that no score was given for reading where the extent was only newspapers and/or magazines or for paid work. The average number of interests per man was 3·7. Age appeared to influence these, because they declined from 3·9 in men aged 65–69 to 2·9 in those aged more than 79. Marital status affected the average number of interests in that they fell from 4·0 for married men to 3·4 for widowers and 2·7 for single men, and the figures for social class were 4·7 for classes I and II, 3·8 for class III, and 3·1 for classes IV and V.

Interest in religion was significantly related to marital status and social class but not to age. The greatest interest in religion was shown by married men and by those in social classes I and II, and the least by single men and those in social classes IV and V.

Some men require more guidance than others on their ways of life; we suggest that this applies particularly to men in the higher age-groups, single men, widowers, and those in social classes IV and V.

Discussion

The time in a man's life when he retires is an abrupt significant phase often associated with a radical alteration in his way of living. The literature is overwhelming in its indications that retirement is detrimental to the health of older men.

Sheldon (1955) advocates a flexible retirement policy to match the individual's wishes and variations in the ageing processes.

Logan (1953) regards compulsory retirement of fit old men as cruel, and comments on the high suicide-rate in the aged.

Dealing with suicide in old age Batchelor and Napier (1953) advise, among other things, the encouragement of continued work for as long as possible as a preventive measure.

Margery Fry (1955) dreams of a workshop where speed is irrelevant and the old people obtain the satisfaction of useful performance. It is her opinion that the sense of uselessness weighs heavily on many old people.

It is clear from this study and the opinions of others that the primary problem of retirement is the related mental stress rather than any physical ill health which may coexist. Between the older men who are physically, mentally, and socially fit to go on working and those who are not, there are those with varying degrees of ability to do so. Thus, even in an ideal society where all men might work until they wished to retire or were compelled to through ill health or social reasons, retirement will have to be faced sooner or later unless death supervenes. Comprehensive measures are therefore required to maintain the health of older men through many agencies and individuals. Complete success will not be gained unless health-promoting guidance is made available long before the time for retirement. A medicosocial service should exist to protect the mental, physical, and social well being of older men before and after retirement by (1) the routine modification of work to meet the decline in physical and mental powers of the individual or, where this is impossible, guidance into suitable alternative employment; (2) assessment of the social environment, and advice on ways of countering actual or potential problems; (3) the provision of facilities for the routine clinical assessment of older men, to detect physical disease and to treat it as early as possible; and (4) pre-retirement and post-retirement guidance on the maintenance of health, and the development of added interests in life.

Certain of these four criteria have been met at the Rutherglen Consultative Health Centre. Although this report is based on the records of men aged 65 or more, the centre's facilities are available to all men aged more than 54. There is therefore opportunity to give not only the older men but also those who have not attained

the age of 65 specific and accurate guidance about maintaining their health (Anderson and Cowan 1955).

The influence of the centre does not extend into industrial concerns and cannot recommend to managements adjustments between worker and work, but what has been done is to advise the individual on the effects of his work on his health. The advice is based on the doctors' knowledge of the patient's health and of his work as described by him. The industrial medical officer is the most suitably placed to resolve the problems of the demands of work in relation to the declining powers of ageing workers. This is a vital function of the industrial medical officer's responsibilities. Where there is no industrial medical officer the local health authority has a duty to provide guidance on these matters. The industrial medical officer in any programme of health which he formulates for the older worker should work in liaison with the general practitioner, the medical officer of health, and the consultant physician. There is, furthermore, an urgent need for an employment office for older workers, as suggested by Mackintosh (1951), where jobs would be properly advertised with appropriate salaries and the candidates interviewed and tested. He emphasised part-time employment, but we feel that full-time work requires equal consideration.

Summary

The correlation between the attributes of work and retirement and the health of 323 men aged 65 or more who attended the Rutherglen Consultative Health Centre is assessed.

Significantly most of the retired men were compelled, often against their desires, to cease work.

The commonest factors causing unwanted retirement were "heaviness" or "strain" of work, ill health, and compulsory retirement.

Arterial degeneration was the commonest cause of retirement due to ill health.

To retire truly contented and mentally adjusted was the privilege of the few.

When occupational change took place late in life, it was usual for the skilled worker to be forced into unskilled or partly skilled work if he wished to continue in gainful employment.

The older men who were still working were not necessarily in good health, and much was done to promote their mental and physical fitness for work.

Financial assistance, where it was needed, was commonly provided by the relations if they could afford it.

The men who were working were significantly happier than those who were retired. Interests declined in the older age-groups, and single men and widowers did not make good use of their leisure hours. The higher the social class the wider were the interests.

A comprehensive and integrated guidance service to give advice before, during, and after retirement is urgently required. The fundamental aim is to adjust the older worker to meet retirement in optimal mental and physical health, and so to facilitate the transition from work to retirement with happiness and contentment. A suggested scheme is outlined, of which a large part is provided at the Rutherglen Consultative Health Centre for older people.

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THE REMUNERATION CLAIM

Correspondence with the Ministry

A LETTER from the Permanent Secretary of the Ministry of Health, dated Nov. 21 and containing the Minister's answer to the supplementary memorandum of the Negotiating Committee, was published in our issue of Dec. 1. The subsequent correspondence between Sir John Hawton and Dr. A. Macrae, secretary of the Negotiating Committee, is reproduced below. A meeting of the Negotiating Committee will be held on the morning of Jan. 3 and representatives of the committee will meet the Ministers on the following day.

Nov. 22, 1956.

Dear Sir JOHN,

I am writing to acknowledge receipt of your letter of yesterday, informing me that Ministers remain of the opinion that no contractual obligation such as has been alleged by the Negotiating Committee exists and that no action based on such a claim could succeed.

When we met the Minister of Health on August 1st, almost his first words were that the last thing he and his colleagues had intended was that their reply to the original memorandum submitted by the Negotiating Committee should be regarded as curt.

I must say that I am disappointed by the curtness of this new communication. You will remember that the Minister told us that, although there would be constitutional objections to his sending us a copy of the statement received from his legal advisers, we might have a "reasoned reply," based on the views of his advisers, in the event of these views differing from those of the legal experts who have advised the Negotiating Committee.

I am surprised to find no reference to this in your letter. May I know, please, whether a "reasoned reply" is being prepared? If so, I hope that I may receive it before next Wednesday, November 28th, as the Negotiating Committee will be meeting on the morning of that day.

Yours sincerely,
A. MACRAE.

Nov. 27, 1956.

Dear Dr. MACRAE,

Thank you for your letter of the 22nd November about the memorandum on the Negotiating Committee's views on the legal aspects of the claim for increased remuneration.

I am asked to assure you that it was far from the intention of Ministers to give any impression of curtness or discourtesy in their reply to the memorandum. Indeed, as I explained in my letter they have most fully and carefully examined the arguments contained in the memorandum. From their point of view the position is simply this; the question at issue was whether or not they could be held to have entered into a legal contract involving the automatic adjustment of medical remuneration in the manner suggested by the Negotiating Committee. After their full examination of the Committee's memorandum, they are convinced that they cannot be held to have entered into such a contract, so that it is difficult to see what there is that can be usefully added to their expression of that conviction.

I am asked to say, however, that—while there does not seem to be anything more helpful which they can add—they will be only too pleased to meet and hear the representatives of the Negotiating Committee again if that should be the Committee's wish.

Yours sincerely,
JOHN HAWTON.

Nov. 29, 1956.

Dear Sir JOHN,

The Negotiating Committee have now considered your letter of the 21st November, and can only assume that it is based on a complete misconception of the nature of the case which has been made out in their supplementary memorandum.

The Committee have never alleged that the overriding contractual obligation of the Government to the two branches of the profession is an obligation which could be enforced by legal proceedings in the ordinary way. What is vital to the profession's case is that the contractual obligation exists, whether or not it be enforceable by such legal proceedings. Implicit in the contractual obligation is the moral obligation

of both parties to the bargain to honour their promises, and the moral obligation may well be the more cogent by reason of difficulties of legal procedure. The position of the profession is, quite simply, that the Government is under both a contractual and a moral obligation to implement the promises which were made to the profession when they entered the National Health Service; and in the view of the Committee observations as to the difficulty of enforcing this obligation are beside the point and can only tend to confuse the real issue.

You will recall that at the meeting of the 1st August, 1956, between the Ministers and the representatives of the Committee it was agreed that the Committee should submit a supplementary document dealing in greater detail with the legal aspects of the case. That promise was implemented by the memorandum which the Committee submitted on the 12th September, and it was well understood that after receipt of this memorandum the Minister would prepare and send to the Committee a reasoned answer. The Committee cannot accept your letter as a complete or satisfactory explanation of the Minister's position, or as a fulfilment of the understanding which was reached at the meeting.

On receipt of the Minister's full answer, the Committee would wish to seek an early meeting with him in order to discuss what steps should next be taken to resolve the differences between the parties.

Yours sincerely,
A. MACRAE.

Dec. 3, 1956.

Dear Dr. MACRAE,

Thank you for your letter of the 29th November, which I have at once shown to Ministers.

They ask me to say that, as they see the position, it is really twofold. There have so far been two main issues put before them. The one is that of the general claim of the Negotiating Committee that there should be, on merits, increased remuneration for the medical profession. The other is that, apart from or in addition to the claim on merits, there was a definite contractual obligation upon Ministers to agree to increased remuneration.

On the former, the main claim on merits, Ministers have, as you know, decided that under present economic circumstances, they could not at the moment consider it. They have not decided for or against the merits of the claim at all, but merely that this is not the moment to consider it.

On the second issue, when it was put to Ministers by the Committee that there was a binding contractual obligation, it was clear that if that were so the position might be very different. They therefore at once agreed to consider this aspect of the claim and were assisted by a full memorandum on the legal aspects which your Committee gave them. After considering this most carefully they decided that such a contractual obligation did not exist. It was to this second issue that my letter of the 21st November was restricted.

That, in summary, is the position to date. If the Negotiating Committee's representatives wish to hear further from Ministers why they have had to decide that this is not the time to consider a claim, Ministers will—as I have assured you—be very ready at any time to see them personally.

I do hope this removes any misunderstandings as to the replies so far given to the Committee.

Yours sincerely,
JOHN HAWTON.

Dec. 7, 1956.

Dear Sir JOHN,

I am asked by the Joint Chairmen of the Negotiating Committee to say that they find your letter of 3rd December most unsatisfactory.

At considerable trouble, and at Mr. Turton's own invitation, the Committee prepared a closely reasoned document which was sent to you on 12th September. The Committee were promised, and are entitled to expect, a reasoned reply. They still await that reply. They would be glad to receive it in the near future.

Yours sincerely,
A. MACRAE.

Dec. 13, 1956.

Dear Dr. MACRAE,

Thank you for your letter of the 7th December. I have of course consulted Ministers on it and they have considered most carefully what you say. They find it difficult, however, to see what they can usefully add to my two last letters of the 27th November and 3rd December, and I can only say that—as I made clear in those two letters—they will be glad at any time to meet and hear the Negotiating Committee's representatives if that should be the Committee's wish.

Yours sincerely,
JOHN HAWTON.

Dec. 18, 1956.

Dear Sir JOHN,

The Joint Chairmen of the Negotiating Committee have now examined your letter of 13th December and have observed that, despite the promise given by Mr. Turton on 1st August, the Ministers are unwilling—and presumably unable—to answer the arguments contained in the memoranda submitted to them by the Committee.

The Joint Chairmen have nevertheless decided to accept the offer of the Ministers to meet representatives of the Committee and arrangements have been made for this meeting to take place at the Ministry of Health on Friday, 4th January. I am asked to state that this decision is without prejudice to the rights of the profession under the Spens Reports.

Yours sincerely,
A. MACRAE.

Public Health

MASS RADIOGRAPHY ASSOCIATED WITH A GENERAL HOSPITAL

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DOUBTS have been expressed about whether or not indiscriminate radiography of large numbers of the general populace for the purpose of detecting cases of pulmonary tuberculosis is really effective in revealing the bulk of the infectors and infected. *The Lancet* (1955) has asked "Who are the infectors?" and states that "as infection in general diminishes, relatively more infectious lesions are likely to be found in older people," and goes on to say that "mass-miniature radiography, useful as it has been in case-finding, is so obviously bowing to the law of diminishing returns." Possibly some infectors are unwilling, for economic or other reasons, to submit themselves to the risk of detection. "Is tuberculosis changing?" asks the *British Medical Journal* (1956) and points out that the proportion of tuberculous patients among older men is increasing, and that public-health measures have less effect in prevention among these than among younger adults.

I describe here the lay-out and working of a mass-radiography section added to the radiological department of a general hospital, the results of three years' work, and the lessons learnt from the experience gained. The section was opened in August, 1952, as the result of a project sponsored by the tuberculosis subcommittee of the North-West Metropolitan Regional Hospital Board. The period covered in this survey is 1953–55. A prime object of the project was to determine whether there was a large pool of infectors among patients attending or admitted to general hospital for other causes than pulmonary tuberculosis.

Location of Unit and Staffing

It was impossible to provide accommodation for the mass-radiography section in the main radiological department or in the outpatient department; so it was decided to build a small department adjacent to, but distinct from, both. The general plan of the section is shown in fig. 1. The section was erected in single brick with the usual services on a concrete base. The entrance

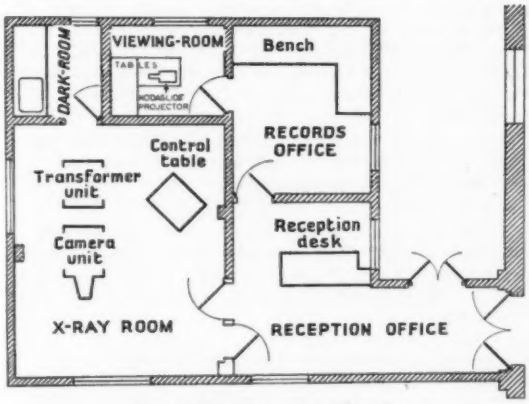

Fig. 1—Plan of mass-radiography unit.

to it is directly from the main hospital corridor on the line of admission of most ward patients. It is sufficiently near the main hospital entrance to be easily accessible to patients referred by their general practitioners.

Patients give necessary information at the clerks' desk in the entrance hall and proceed directly into the radiography room through double doors swinging in opposite directions so that those entering do not clash with those leaving. The patients take with them their mass-radiography identification card. Since outer garments alone are removed for the examination, it is unnecessary to separate the sexes.

A small dark-room is attached to the radiography room for developing 35-mm. roll film only. Since all recall examinations are made in the main radiological department, no large films are developed in the section. A general office with filing accommodation backs on to the reception space, and a tiny projection office for reading films is included.

The hours of working are from 9 A.M. to 5 P.M., with no midday break, on weekdays, and from 9 A.M. to noon on Saturdays.

The staff consists of three whole-time clerks and two radiographers, one of whom is employed as a relief for the other during mealtimes and when off duty. The radiographers do a month's duty in the section, and all the junior radiographers on the hospital staff take part in a rota. The three clerks have been fully employed obtaining and maintaining efficient records from which the information required could be obtained; this has required considerably more breaking down than is usually necessary in routine mass-radiography practice.

Source of Examinees

Examinees are referred from several sources. So far as possible all new outpatients aged 15 or more are radiographed on their first attendance. After the usual outpatient documentation they are routed through the mass-radiography department before being seen by the consultant service to which they were referred. This takes only a few minutes with good sign-posting and prompt attention to detail. The attending patient is not asked whether he or she wishes to be done, and the matter is presented as a matter of documentation. Protests are extremely rare and are dealt with by straightforward explanation. Complete refusal has hardly been encountered. The only outpatient group not so radiographed was that attending the chest physician's outpatient clinic, because these have had, as a routine, a large chest film before being seen by the service.

Inpatients aged 15 or more are radiographed on their way to the ward if they are fit enough; otherwise every effort is made to examine them as soon as they are. Some of them have already been radiographed as outpatients and are not routinely radiographed again on admission as inpatients (the outpatient and inpatient case-sheets are marked suitably with the date of the radiological examination). Other inpatients have already had a large film taken of their chests; so they too are not routinely radiographed again. These exceptions considerably reduce the numbers of inpatients radiographed; the proportion radiographed on admission did not amount to much over 20% of the total hospital admissions in the three years.

Most of the staff appointed to the hospital group and applicants were radiographed as a routine by the department. In a minority a large film of the chest was taken when an immediate report was required, because the 35-mm. film is read the day after filming.

It was soon evident that the service could be usefully extended to the general practitioners of the area round the hospital; over 150 doctors were invited to refer patients, and they have been kept in touch with the results of each year's working through a brief report sent out annually. Informal contacts are a matter of daily routine. The service has grown steadily in popularity and has been generally appreciated. The lack of necessity for making any appointment for their patients is a great convenience to the busy practitioners.

Another group are persons referred by area medical officers for very varied reasons.

Early in the experimental period contacts were made with works' medical officers, and soon a scheme of routine referral of newly appointed staff was arranged with employers willing to take all reasonable steps to assist any employee obliged to stop work because of a significant finding. These employees form a large part of the group listed as self-referred; in 1955 from one employer alone more than 4000 employees were examined. The self-referred group also included B.C.G. follow-ups from the local chest clinics, casual passers-by, and people who rang up to find out if they could attend, family contacts of known cases, and various other small groups—e.g., school teachers referred by the education authorities. Though the local press have been informed occasionally about the unit, no attempt has been made to encourage large numbers of the general public to attend.

Methods of Reporting

The 35-mm. film is read, on the morning following the day of filming, by a member of the staff of the radiological department, and double checking has been done for the past year. Negative reports are issued that day for all the general practitioners' patients found normal and recall requests are sent out to patients requiring further examination. Patients recalled are asked to attend the main radiological department for further examination "for technical reasons." In case of obvious urgency the doctor concerned is informed of the recall step by telephone and informed about the probable diagnosis. Should the patient not return in an urgent case within a week, or in a non-urgent case within a fortnight, the doctor or service concerned is informed by letter of the radiological findings on the miniature film. In most instances the patient returns within a few days, the necessary large films taken are reported on, and the result is communicated in writing to the patient's doctor or to the secretary of the appropriate outpatient or inpatient service. In the case of patients with suspected or obvious pulmonary tuberculosis who are referred by general practitioners, the physician of the chest clinic of the area in which the patient resides is informed

TABLE I—ORIGIN OF 97,362 PATIENTS EXAMINED BY MASS RADIOGRAPHY IN 1953–55

Source	No. of cases	Cases of significant suspected tuberculosis	Rate per 1000
Outpatients	36,334	123	3·4
Inpatients	7077	36	5·1
Own doctor	22,335	283	12·6
Self-referred	21,450	74	3·4
Staff and applicants for staff appointments	3886	6	1·5
Area medical officers	6280	26	4·1
Total	97,362	548	5·6
Antenatal patients	8476	24	2·8

In addition there were 99 known cases.

at the same time as the patient's doctor, each doctor being made aware that this information has been given to the other. In self-referred cases the patient's doctor is always informed of the result of the examination. Negative reports are not issued in respect of hospital patients.

Statistical Analysis of Results

Pulmonary Tuberculosis

Table I sets out the source of reference of the 97,362 patients radiographed by the unit in 1953–55, the number of cases of significant suspected tuberculosis detected, and the rate per 1000. It will be seen from this

TABLE II—FOLLOW-UP OF 548 CASES OF SUSPECTED TUBERCULOSIS FOUND BY MASS RADIOGRAPHY

Disposal	Men	Women	Total
Hospital or sanatorium treatment:			
Sputum-positive	98	66	164
Sputum-negative	24	31	55
No sputum	5	4	9
Classified as tuberculous or under chest-clinic observation as such:	124	113	237
Total finally regarded as tuberculous	251	214	465
Classified as non-tuberculous or final diagnosis not decided	54	29	83
Total	305	243	548

that the rate for patients referred by their doctors (12·6 per 1000) was much higher than that for hospital patients (3·4 and 5·1 per 1000 for outpatients and inpatients respectively). The self-referred and staff appointees gave the lowest rate. In 8476 antenatal patients 24 (2·8 per 1000) were found to have pulmonary tuberculosis.

Table II shows the fate of the 548 patients classified as tuberculous in table I. The information was obtained by inquiry from chest physicians to whom a routine letter requesting the completion of an enclosed questionnaire is sent on notification of any patient to him. 465 patients were finally classified as tuberculous. More than a third of these were sputum-positive, and nearly a half (219) required hospital or sanatorium treatment; the remainder were under periodic supervision at a chest clinic.

Fig. 2 shows the rate of pick-up of the 465 accepted cases of pulmonary tuberculosis, with age and sex. The rate in males predominates, except in the youngest group and increasingly from the age of 25 onwards.

Table III sets out the number of sputum-positive cases according to their source of reference, and a similar distribution is shown as in table I, with the "own-doctor" sputum-positive rate of 4·5 per 1000 well ahead of the rest.

TABLE III—DISTRIBUTION OF SPUTUM-POSITIVE CASES ACCORDING TO SOURCE OF PATIENT

Source	No. of cases*	Pick-up	Rate per 1000
Outpatients	36,334	28	0·8
Inpatients	7077	10	1·4
Own doctor	22,335	100	4·5
Self-referred	21,450	19	0·9
Area medical officer	6280	3	0·5
Staff	3886	1	0·3
Antenatal	8476*	3	0·4
Total	97,362	164	1·7

* Also classified as either "outpatients" or "area medical officer," and therefore not included in total.

Table IV shows the sputum-positive cases arranged in groups of men and women over and under the age of 45 and the rate in each group. It will be seen that the rate for men is higher over that age than below it (2·9 per 1000 and 2·2 per 1000 respectively), and the rate for women (0·7 and 1·4 per 1000) is lower in both groups and much lower in those aged 45 or more, in whom it is about a quarter of the rate for men of that age. Of the 100 sputum-positive patients referred by general practitioners 63 were men and 37 women, yet the number of women examined was in excess of the men by just over 500 in a total of 11,000 odd. The detailed analysis of this group is set out in table V.

TABLE IV—AGE-DISTRIBUTION OF SPUTUM-POSITIVE CASES

Age (yr.)	No. examined	No. sputum-positive	Rate per 1000
Children under 15:	3895	1 (female)	0·26
15–45:			
Male	25,699	56	2·2
Female	39,929	56	1·4
45 or more:			
Male	14,015	42	2·9
Female	13,824	9	0·7
Total	97,362	164	1·7

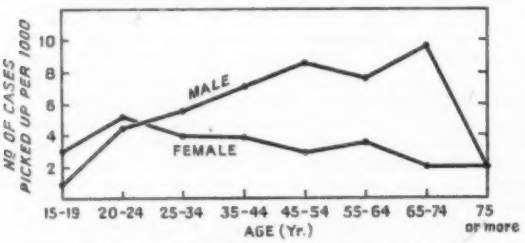

Fig. 2—Rate of pick-up of 465 cases of tuberculosis.

Of 39,714 men examined 249 were tuberculous (6·6 per 1000)
Of 53,753 women ,, 213 ,, ,, (3·9 ,,)
Of 3895 children ,, 3 ,, ,, (0·7 ,,)

Primary Pulmonary Neoplasm

117 cases of primary pulmonary neoplasm were detected in 98 men and 19 women among the patients examined, and the number of cases and their sources of reference are given in table VI. Here again the highest rate (3·8 per 1000 of all ages and sexes) is in the patients referred by their own doctors. The age-distribution of the male cases is set out in table VII. No case was detected in patients aged less than 35. The rate increases rapidly from 0·6 per 1000 in the 35–44 age-group to 10·7 per 1000 in the 65–74 age-group. 93 cases of pulmonary neoplasm were in men aged more than 45, and the same group provided 42 cases of sputum-positive pulmonary tuberculosis.

TABLE V—RATES OF SPUTUM-POSITIVE CASES IN PATIENTS REFERRED BY OWN DOCTORS

Age (yr.)	No. examined	No. sputum-positive	Rate per 1000
15–45 :			
Male	6942	36	5·2
Female	8482	35	4·1
45 or more :			
Male	3836	27	7·0
Female	2806	2	0·7
Total	22,066	100	4·5

Other Diseases and Conditions

As would be expected, various diseases and conditions were encountered. The more important of them were as follows :

Condition	*No. of cases*
Pneumonia	242
Bronchiectasis	323
Simple pulmonary collapse	64
Emphysema	1057
Healed tuberculosis (calcified lesions)	1954
Pleural effusions	60
Secondary deposits in lung	23
Lung abscess	3
Spontaneous pneumothorax	24
Pneumoconiosis	23
Mitral stenosis	74
Cor pulmonale	22
Dextrocardia	9

The term " pneumonia " includes lobar pneumonia, atypical pneumonia, and a few cases of bronchopneumonia.

TABLE VI—DISTRIBUTION OF PULMONARY NEOPLASMS DETECTED BY MASS RADIOGRAPHY

Source	No. of patients examined	No. of cases of neoplasm	Rate per 1000
Outpatients	36,334	18	0·5
Inpatients	7077	7	1·0
Own doctor	22,335	85	3·8
Self-referred	21,450	7	0·3
Staff and applicants for staff appointments	3886	..	..
Area medical officer	6280	..	..
Total	97,362	117	1·2

Only a few of the patients regarded as having evidence of " bronchiectasis " were submitted to bronchography. More or less gross emphysema was one of the commonest abnormalities detected.

Discussion

Though the medical staff of the hospital knew that a patient had been examined by mass radiography, they did not hesitate, when clinical indications were present, to request a large film of the chest. Abnormalities discovered in this large film were not credited as discovered by mass radiography ; therefore the discoveries of active pulmonary tuberculosis by routine mass radiography of outpatients and inpatients represent genuine unsuspected disease. Similarly all previously known cases of pulmonary tuberculosis have been excluded from the figures in any of the groups.

TABLE VII—AGE-DISTRIBUTION OF MEN WITH PULMONARY NEOPLASMS

Age (yr.)	No. of patients radiographed	No. of cases of neoplasm	Rate per 1000
35–44	7987	5	0·6
45–54	7368	34	4·6
55–64	4280	38	8·9
65–74	1866	20	10·7
75 or more	500	6	12·0
Total	22,001	103	4·6

Men aged 45 or more : 98 neoplasms of lung.
42 pulmonary tuberculosis with positive sputum.

Table III shows that the incidence of sputum-positive tuberculosis in any of the groups attending was not significantly different from that in the general population except in patients referred by their own doctors. The answer to the prime question for investigation—i.e., whether there was a large unsuspected source of infection in persons attending hospital—was clearly in the negative. It was, however, shown that, by providing immediate radiological facilities for the general practitioners in the hospital area, a rate of discovery about five times the average was possible. The policy has become to encourage this referral from general practitioners more and more. The advantages in associating a mass-radiography unit with a general " district " hospital as a result of our experience are many.

Active cases of open tuberculosis have undoubtedly been discovered in both inpatients and outpatients who would not otherwise have been detected until a later stage in their disease. General practitioners have continuous contact with their district hospital, they appreciate the necessity for limiting demand on consultant-service time, often they are deterred from asking for consultant opinion when they require a simple assurance from a radiographic examination. A miniature-film service, backed by the resources for investigation that a large hospital possesses, provides an efficient and much appreciated service to the practitioners in the area from which the hospital draws its patients. People living in the hospital " catchment area " have no hesitation at all in attending for radiography there, especially when this is possible without having to wait for an appointment, and readily agree when this is suggested by their doctors. The family doctor is kept well in the picture, as he should be. From the unit's point of view the association with the hospital means that free and full clinical appraisal of any problem is available on the spot, and regular clinico-radiological discussions of cases presenting diagnostic or treatment difficulties are held every week.

The analysis of the findings has underlined the prevalence of tuberculosis in men and its sustained activity at all ages in men. The relative decline in tuberculosis with advancing years in women may be associated with many causes, of which one may be a diminished exposure to infection at work.

Primary pulmonary neoplasm was shown to be about twice as common as sputum-positive pulmonary tuberculosis in men aged more than 45, and concern about the dominant position it has achieved is fully justified.

Summary

Experience with a mass-radiography unit working as part of the radiological department in a general hospital for three years is described, together with the findings.

Nearly all new adult outpatients attending the hospital during the period were radiographed, together with as many inpatients as possible. Patients were also referred by general practitioners direct to the unit. Other sources of reference were surrounding industries, area medical officers, contacts, and hospital staff.

Active pulmonary tuberculosis was not discovered in an unusually high proportion of inpatients or outpatients, but the rate of 4·5 per 1000 among patients referred by general practitioners was four or five times as high as in the general population. The rate in men

was highest over the age of 45 and was much greater than in women.

Primary neoplasm of the lung was found twice as often as sputum-positive pulmonary tuberculosis over the age of 45 in men.

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The Maternity Services

In Worcestershire 68% of all births now take place in hospital. In his report for 1955, Dr. J. W. Pickup, the county medical officer of health, suggests that the time is rapidly approaching when patients will cease to attend local-authority antenatal clinics for clinical examination. Instead these clinics will become educational centres where expectant mothers can be fully informed and reassured about the coming confinement and the care of the baby. Here, too, they will meet other expectant mothers and discuss their common problems, and be able to take part in relaxation classes under the supervision of a physiotherapist. Many midwives have commented on the excellent results of such classes.

There has, Dr. Pickup continues, been some anxiety whether all expectant mothers have been receiving adequate antenatal care. Any inadequacy may be due partly to the present division of responsibility for the maternity services, and partly to the unreadiness of many mothers to attend for regular antenatal supervision. An antenatal coöperation card was introduced in the county some time ago; but unfortunately this card is not yet used by all parties concerned. "It is possible for an expectant mother to book a doctor and a midwife, who, between them, supervise her antenatal care, then for her to be rushed into hospital for her confinement, and her antenatal records and previous medical history are not available to the hospital staff to guide them in the emergency delivery."

Medicine and the Law

Disciplinary Proceedings in Hospitals

IN 1951 the Ministry of Health issued a memorandum [1] on machinery for dealing with disciplinary cases affecting all grades of staffs (other than consultants) employed in the National Health Service. The memorandum laid down different procedures for (1) employees whose employment could be determined by an individual officer or by a committee of the employing authority; and (2) employees whose employment ought only to be terminated by a decision of the full authority.

The latter were to be taken as including the more senior grades—e.g., senior professional (including nursing), administrative, and technical staff. The memorandum indicated that in the case of such staff no decision on disciplinary action should be taken without affording the employee an opportunity of being heard. "The employee should have the right of appearing personally at the hearing either alone, or with a representative of his professional organisation or trade union, or with a friend not appearing in a professional capacity. At the hearing no member of the authority who is directly involved in the circumstances . . . should have a part in the decision which the employing authority must thereupon make."

A new circular [2] indicates that the general procedure, and particular safeguards recommended in the 1951 memorandum, should continue to be observed in all cases. The new circular, however, gives some further guidance to hospital authorities about cases involving the professional behaviour or competence—as distinct from the personal conduct—of any doctor or dentist in their employment. It is recommended that a small investigating committee should be set up wherever a prima-facie cause of complaint exists which, if well founded, would give rise to the possibility of disciplinary action. The duty of the investigating committee would be to ascertain the facts, to form a view as to whether the practitioner was at fault, and to report to the authority accordingly. It would apparently be no part of the committee's duty to consider what disciplinary action should be taken in cases where they come to the conclusion that the practitioner was at fault.

In some cases the cause of complaint will have arisen out of an incident in respect of which an accident report has been made in pursuance of circular H.M. (55) 66. Where this is so, the new circular suggests that, in deciding whether to appoint an investigating committee, the hospital authorities should have regard to this accident report as well as to other information in their possession. Circular H.M. (55) 66 lays considerable emphasis on the steps to be taken to safeguard legal privilege for accident reports. The use of accident reports in the way suggested in the new circular would apparently not destroy the legal privilege, but privilege probably would be lost if the reports were made available to the investigating committee.

The new circular suggests that an investigating committee should be predominantly, but not exclusively, professional and should include one or two independent professional members of high standing not associated with the hospital or the case. It is emphasised that, during the proceedings of the investigating committee, the practitioner should enjoy all the safeguards set out in the 1951 memorandum (as quoted above), but these safeguards are extended—at least so far as the proceedings before the investigating committee are concerned—to include the right of legal representation.

It is intended apparently that the new procedure should extend to cases affecting consultants and other senior officers but without prejudice to their rights under section 16 of the Terms and Conditions of Service of Hospital Medical and Dental Staff.

1. Attached to circular R.H.B. (51) 80.
2. H.M. (56) 98.

Deaths by Poisoning in Hospital

Two women patients in a Scottish mental hospital have died from an irritant poison as a result of oxalic acid being administered in mistake for Epsom salts.[1]

From evidence given at a public inquiry into the deaths, it appears that one of the sisters had instructed an assistant nurse to make up 17 doses of Epsom salts for patients. The salts were kept in the sick ward in a small tin which was refilled occasionally at the dispensary. It had last been filled about a fortnight previously, when, in the absence on holiday of the dispenser, the deputy matron and the assistant matron had together made up orders for various wards, including Epsom salts. There was a supply of oxalic acid in the dispensary; oxalic acid had at one time been used in the laundry, which was not now in existence.

The assistant matron told the inquiry that she had filled a small tin from a brown package on the floor of the dispensary which had no label on it, but which was damaged at the side allowing some of the crystals to escape. She had merely scooped the crystals from the package into the tin. She thought that this package had been used at the time for Epsom salts.

It appears that the presence of oxalic acid in the dispensary was known to at least some people in authority since the deputy matron told the inquiry that some time previously there had been a big clean-up in the dispensary when she was warned not to touch certain crystals; she realised now that these must have been oxalic acid.

1. *Glasgow Herald*, Nov. 23, 1956.

In England Now

A Running Commentary by Peripatetic Correspondents

THE most cautious expression of good will that I got last week was from the deputy assistant greetings officer of the North-West Lapland Regional Christmas Board (Chairman: S. Claus. Vice-chairman: Noel Noel). Writing on behalf of an executive committee whose names seemed strangely familial, this officer wrote:

. . . I am instructed to wish you one notional full session [" one half session " deleted] of duly authorised merriment on Christmas Day, and also I am instructed to convey permission from the Board for you to be wished your full allocation of happiness and prosperity on a maximum full-time basis [" on a part-time basis 9½/11ths " deleted] commencing on 1 Jan. '57 and continuing until 1 Jan. '58 unless terminated by the Board's Representatives before that date.

No prosperity or happiness wished to you by the executive committee is guaranteed by the Board, and it must be clearly understood they cannot be held responsible if you do not receive your accredited allowance, which has been calculated in accordance with Article 5 of the Terms and Conditions of Christmas Wishes for Medical and Dental Staff (England and Wales, 1956). If you wish to make a appeal against the decision of the Committee, you are requested to attend at Regional Offices 6.0 p.m. Boxing day; sherry.

* * *

No British visitor to Denmark can feel that he has travelled far from home. On landing at Kastrup only two things may remind him that he is no longer in Colchester: the language and the cyclists—and especially the cyclists. In England the cyclist pursues a furtive course, evading as best he may the cars that edge him off the road, yet doggedly refusing to ride on the special tracks where they are occasionally provided for his use. In Copenhagen, on the other hand, the cyclist meets the motorist on equal terms at the roundabouts. Elsewhere he must stick to the bicycle track set between sidewalk and road; and this he does gladly, making sure that (as the law also prescribes) his track is inviolate. One day, stepping from a car I put one tentative foot on one of these tracks. A passing cyclist, who looked quite sober, let loose a majestic volley of oaths which carried him on his way until his back was a distant speck. One explanation of the Danish cyclists' lack of hesitation in proclaiming their rights is that they are numerous and therefore a political force. But are they not right to prefer order to anarchy?

* * *

The leader on Smell (Dec. 15) reminds me of Kipling's poem *Lichtenberg* in *The Five Nations*. It describes very vividly the way that memory of a smell clings about the brain; and suggests support for a direct connection between the cortex and the olfactory bulb. The poem begins with a most attractive alliteration:

Smells are surer than sounds or sights
To make your heart-strings crack—

* * *

The atomic age dates from the work of J. J. Thomson, Cavendish professor of experimental physics at Cambridge, who was born on Dec. 18 a hundred years ago. In 1918, when I took the first M.B. I was examined in practical physics by J. J., whom I instantly recognised from his photographs, and by a young man who was later to become professor of physics at my hospital in London. I often wondered why J. J. at the height of his eminence spent his time examining students. Many years later I learned the true answer from his co-examiner, who said that J. J. believed in taking his full share of all the routine work of his department. Such is greatness.

* * *

She has been coming to my follow-up clinic for two years with effort angina. This had been gradually progressive. When I saw her three months ago she was restricted to 600 yards at a slow pace. When she turned up again yesterday I was surprised to be told that she was cured—her new doctor's tablets were wonderful. Sceptically I questioned her. " How far can you go now? " " Oh, well, I never go walking without my little dog and he is rather old. He likes to stop occasionally and then we go on."

Letters to the Editor

THE FUTURE OF NURSING

SIR,—The problems of nurse training, put before us by Dr. Ritchie Russell in your issue of Dec. 15, are vexing and difficult, and their urgency has been greatly accentuated by the continued shortage of recruits and the unhappy wastage amongst those in training. The causes of this shortage and wastage are many, and they are well understood: there is the gap between school leaving age and 18 years, which the General Nursing Council in their nostalgic Victorian wisdom lay down as proper for training to begin; there is the competition by educational, business, and industrial careers, which offer freedom after 6 P.M., free weekends, and in some cases financial betterment; and there is of course marriage, which accounts for about 12½% of the whole.

Much more is now required of nurses than just basic nursing. Nurses are expected to shoulder greater responsibility, to carry out complicated techniques, to perform duties formerly given to medical students and residents, and even to participate in research projects; and the multiplication of specialties has added in no little way to the worries of those engaged in nurse training. Those responsible, therefore, for this training have now to provide, on the one hand, nurses who are able to carry out these advanced techniques and who possess high administrative ability, and on the other hand, to provide large numbers of reliable practical basic nurses to meet the present needs of probably three-quarters of the nursing in our hospitals and institutions. It was to meet this latter need that the State Enrolled Assistant Nurse was brought into being. Recruitment, however, for this grade has so far been disappointing and the reasons are not far to seek. Apart from the inhibiting factors to recruitment already mentioned, which are common to both grades of present-day nurse training, there are the added disadvantages of the inferior title and the shut door at the end of the two years' course for assistant nurses. This foolish attitude towards the assistant nurse should now come to an end without further delay. Dr. Ritchie Russell's suggestion that there should be a single National basic course, constructed on the more practical basis of the present assistant-nurse training, should receive earnest consideration, and the status of " nurse," and the " open door " to further training and development by those who have shown ability, should be freely acceded.

There is, however, a very important consideration which must be fairly and squarely faced. There are many responsible people in the nursing profession who feel very strongly that the downgrading of the present student's course would make nursing unattractive to those school-leavers whose educational standards and urge for high attainment require satisfying. The loss to nursing of this important group might be catastrophic. It is just this important criticism against the lowering of standards which brought forth the proposal by Miss J. M. Akester (D.N. Lond.) in the *Nursing Times* of August 19, 1955, that the present nurse training " set up " should be replaced by a university five years' nursing course to run parallel with a two years' practical basic course which would carry with it the full status of nurse together with the open door at the end. This kind of reconstruction is also envisaged in the recent statement of policy from the Royal College of Nursing and both are worthy of careful consideration. The chief criticism which can be brought against these proposals are that we should still have two grades of nurses with a possible implication that only those who take the university course would be likely to obtain the higher appointments even if the door was open to those nurses who had taken the shorter course. This criticism is probably not a very strong one,

because there will always be plenty of room at the top. Possibly more important still is the undoubted fact that you cannot pick your "high ups" at the start of training any more than you can decide upon your medical and surgical consultants at an initial stage. A five years' university nursing course would entitle a successful candidate to the assurance of high office; yet we know quite well that the qualities which make the responsible sister and the administrative officer are not necessarily educational, nor are they always visible across the preliminary interviewing table—and there's the rub!

Leeds, 1. C. WILFRED VINING.

SIR,—I cannot agree with Dr. Ritchie Russell's conclusions, but I have considerable sympathy with his approach. The logic of necessity suggests some modification of the national standard for the training of the assistant nurse. On the other hand this would not absolve the profession from preparing a number of people as leaders and administrators. The health services, in coping with an expanding concept of health, will increasingly need nurses able to play their part at all levels, with a sound general background as well as a good professional education. On the whole it is true also that both the Armed Forces and the Civil Service, as well as many branches of industry, have found that promotion from the ranks does not work so well as preparation for leadership from the start.

I share Dr. Russell's doubts about the need to set the lower age-limit at 18. The prospective registered nurse would not be admitted to training until she had secured university entrance, which would be about the age of 18; but I can see no reason why, in the absence of such an academic requirement, a girl of 17 should not be able to face up to sickness and death, the natural heritage, after all, of every one of us. Are we not becoming a little squeamish about death, and hiding it, as the Victorians hid sex, from our young, until they come to fear it, not "as children fear to go in the dark," but as taboo?

Lastly, surely the liaison between ward sister, district nurse, health visitor, and occupational-health nurse is intended to be administrative rather than clinical—to ensure the patient has continuous care, not to prescribe the form it shall take. I am certain that most nurses would be as anxious as Dr. Russell that they should not trespass on the province of the doctor.

London, S.W.17. BRIAN V. WATKIN.

A SIMPLE SELECTIVE TEST FOR NURSES

SIR,—The letter by Mr. L. R. C. Haward (Dec. 15) is most interesting though not wholly convincing. It would be of help if one knew the existing correlation between the intelligence as tested, and the ability to read analytically and understand technical matter, for each student. I consider that the method devised does not

(*a*) Test the degree of retention after selection. Extraction is one thing, retention another.

(*b*) Attempt to assess the degree of concentration as a prelude to retention and recall.

(*c*) Test the "writing" fluency of the student. Fluency in reading is not a "qualification" for writing.

I am of opinion that, under present-day difficulties, the most efficient method is the one which incorporates an intelligence test and a four-week trial period in a preliminary-training school. The average score in the subjects of anatomy and physiology, and personal communal health at the end of the four-week trial is the criterion in judging the relative suitability of each student. Using this method I found that the mean difference between the average score at the end of the trial period and the score at the end of the three months in the training-school for 35 students was 4 (S.D. = 1·9). Students scoring less than 30% at the end of the period are not considered suitable unless their intelligence quotient is average, or above average, in which case they may complete the course.

Ability to *benefit* from a theoretical course—as distinct from being able to *cope* with it—depends on intelligence, memory, interest, motive for wanting to learn, and an average fluency in English. A favourable combination, nevertheless, seems to be an average intelligence, allied to a "good" memory. The method devised by Mr. Haward is incomplete, and will remain so until recognition is offered to the "aurists" as well as to the visualists, and when retention after selection is assessed.

An excellent mechanical memory has been known to compensate for low intelligence—intelligence in terms of seeing relations between facts. It may be that this method will serve as a means to an end if the cry of "do not encourage a mechanical memory alone" is made by a specific standard. Is it true that nothing comes out of nothing—*nihil ex nihilo fit*?

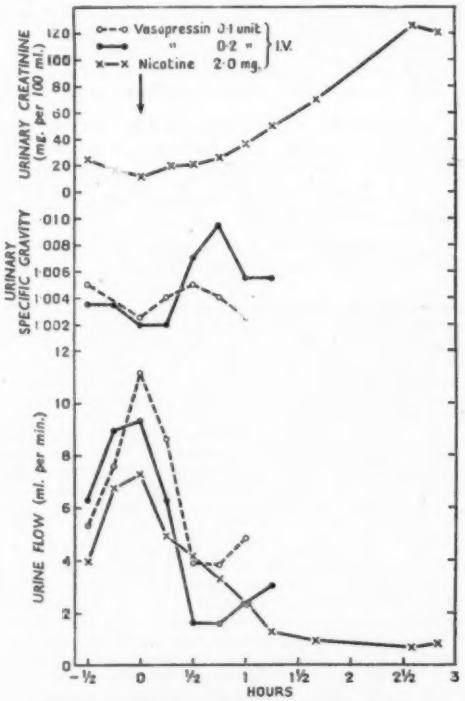
Runwell Hospital, Wickford, Essex. T. ROBERTS
Principal Tutor, Nurses' Training Department.

NEPHROGENIC DIABETES INSIPIDUS

SIR,—I would like to congratulate Dr. Carter and Dr. Simpkiss on showing so convincingly (Nov. 24) that the mothers of boys with sex-linked nephrogenic diabetes insipidus show defective urinary concentration in response to dehydration and a diminished antidiuresis after vasopressin ('Pitressin'). This being a very rare disorder, I feel that the following data should be put on record.

At Hammersmith Hospital in 1951 I did some antidiuresis tests on the mother of a boy with nephrogenic (vasopressin-resistant) diabetes insipidus. On close questioning she admitted to a mild polyuria which had never troubled her greatly. At that time we were unaware of Forssman's observations on such mothers.[1] The mother of this child was unable

1. Forssman, H. *Acta. med. scand.* 1945, suppl. 159.



Responses to intravenous vasopressin and nicotine.

to come into hospital, but agreed to attend in the mornings for the tests. She did not smoke and her urinalysis was normal. Her responses to intravenous vasopressin and nicotine were clearly abnormal (see figure).

During each test she was recumbent and drank 20 ml. of water per kg. (1100 ml.) slowly during the first half-hour. Urine was collected at 15-minute intervals. The injections were given an hour after she had started to drink the water. After 100 milli-units of vasopressin, the urine flow fell only from 11·2 to 3·9 ml. per min., and the urinary specific gravity rose only from 1·0025 to 1·005. There was a slight fall in urinary chloride concentration from 39 to 30 m.eq. per litre, the output of this ion ranging between 230 and 138 μ.eq. per min. After 200 milli-units of vasopressin there was a prompt antidiuresis, from 9·3 to 1·6 ml. per min., with a rise in specific gravity from 1·002 to 1·0095 and of chloride from 22 to 54 m.eq. per litre, with outputs of this ion ranging between 85 and 204 μ.eq. per min. This very large dose of vasopressin caused skin pallor and slight dizziness, though the urinary response was subnormal.

On a third occasion she was given 2 mg. of nicotine base intravenously—a dose which causes acute and profound antidiuresis in normal non-smokers [2] and which in this case caused transient hyperpnœa, dizziness, flushing of the skin, and sweating. Her urinary response was very abnormal. Instead of an abrupt antidiuresis, during 2 hours there was a gradual fall in urine flow from 7·4 to 0·68 ml. per min., with creatinine and chloride concentrations rising respectively from 12·3 mg. per 100 ml. and 25 m.eq. per litre to 126 mg. per 100 ml. and 53 m.eq. per litre. The endogenous-creatinine output fell gradually from 1·0 to 0·7 mg. per min. but returned to 1·0 mg. per min. by the end of the test, indicating a transient reduction in the glomerular filtration-rate.

Although puzzling at the time, this failure to respond normally to very large doses of vasopressin now makes sense in the light of the findings of Carter and Simpkiss. The odd pattern of the nicotine response, however, is harder to explain. Whereas the vasopressin antidiureses were only quantitatively subnormal, the nicotine response was qualitatively abnormal. Studies using other methods of releasing endogenous antidiuretic hormone besides that of nicotine injection, such as the induction of fainting, might throw further light on the nature of the incomplete renal tubular defect in these heterozygous maternal carriers of the disease.

I am grateful to Prof. G. M. Bull and Dr. W. J. Matheson for allowing me to publish data on the mother of their case.

The Middlesex Hospital, London, W.1. OLIVER GARROD.

ANTENATAL RADIOLOGICAL EXAMINATIONS

SIR,—Our report of an apparent association between diagnostic irradiation in utero and the subsequent development of malignant disease (Sept. 1) has evidently given rise to a certain amount of anxiety among radiologists and obstetricians. We would therefore like to express our complete agreement with the views of Dr. Williams and Mr. Arthure (Dec. 8). We have never felt our findings justified a "broad and sweeping condemnation of antenatal radiography." The risk to the fœtus in a properly conducted examination is undoubtedly small, and antenatal radiography should therefore continue to be regarded as a valuable and essential means of saving life, always provided that it is restricted to cases in which there is "a definite clinical reason for referring the patient for this examination."

In his detailed and stimulating letter (Dec. 15) Dr. Rabinowitch has raised a number of points to which we could not do justice in a preliminary communication. We hope to take them all up when our analysis of all the survey material is ready for publication. We may say at once, however, that we cannot accept his view that the dose of X rays received during a single antenatal examination is too small to be regarded as a plausible cause of later malignant changes. Nor do we agree that our results could have been produced by the presence of material conditions which both called for special radiological investigation *and* predisposed the fœtus to malignant disease. Nearly all the request forms for the X-ray examinations bear the legend "routine" or "? twins" or "? position of fœtus." Most of the women examined were in excellent health at the time and have borne (before and since) other perfectly healthy children.

ALICE STEWART
J. W. WEBB
B. D. GILES
D. HEWITT.

Department of Social Medicine, University of Oxford.

2. Cates, J. E., Garrod, O. *Clin. Sci.* 1951, **10**, 145.

MYOPATHY IN SHEEP

SIR,—We should like to reply to the main points raised by correspondents in their letters on our paper of Oct. 13.

Dr. Blaxter and Dr. MacDonald (Oct. 27) strongly press the view that the myopathy we are describing in sheep is very similar to, and comparable in almost all respects with, the vitamin-E-controlled disease that they have been studying in calves.[1–3] We cannot agree. The lesions which they describe in their letter are those seen in *calves*. The recognised vitamin-E-deficiency muscular dystrophy in *sheep* is "stiff-lamb" disease, which is a well-known syndrome quite unlike the myopathy that we describe. The disease in adolescent sheep reported by Marr, Sharman, and Blaxter [4] is also dissimilar to our myopathy. One of us (H. B. P.) had an opportunity of studying sheep affected with dietetic muscular dystrophy of the vitamin-E-controlled type and of observing experimental studies of this disease in the United States about twenty years ago, and sporadic cases have been encountered since in Australia and England. Naturally, therefore, we considered the possibility that the myopathy in our sheep was a vitamin-E deficiency and concluded that this was unlikely. We felt that a lengthy discussion of this would only confuse the issue, however.

(1) *The dietetic muscular dystrophy of calves* which Dr. Blaxter and his colleagues [1–3 5] have studied is primarily a disease of infancy and adolescence; our sheep myopathy is essentially a disease of middle age and of reproductive life. The experimental disease in calves may be induced by feeding special diets containing much unsaturated fat (especially cod-liver oil [6]); our sheep have been on natural diets and received no cod-liver oil. The natural disease [3 5] was an endemic affection of sucking calves housed during the winter indoors and occurring in the spring in the North of Scotland under difficult conditions of husbandry and after generally inadequate winter feeding. Our myopathic sheep may be affected at any time of the year; they have come from the best-managed and best-fed flocks in the United Kingdom, and identically fed sheep will provide many of the prize-winners at our leading agricultural shows year by year. In particular, our sheep have been kept in the open during the winter and fed on kale (which is a particularly good source of vitamin E [3]) —marrowstem, thousand-head, hungry-gap, and canson in succession—cabbages, kohlrabi, swedes and sugar-beet tops, mangolds in moderation, turnips occasionally, leys of improved strains of grasses and clover, sainfoin, hay of the best quality, and as much first-class-concentrates feed as they will eat. Straw and poor hay are considered unsuitable foods for the class of stock with which we are dealing.

Further the disease in cattle occurs principally in calves still sucking their dams, the latter being clinically normal. In our sheep it is the *dams* which are affected, while the lambs they suckle are unaffected; and indeed these thrive as long as the ewe is well enough to get about and feed. Dr. Blaxter has suggested [3] that it is the low α-tocopherol status of the mother cow which gives rise under suitable conditions to muscular dystrophy in the sucking calf. If this is so it seems to us inconceivable that our myopathic sheep with their

1. Blaxter, K. L., Wood, W. A. *Brit. J. Nutr.* 1952, **6**, 144.
2. Sharman, G. A. M. *Vet. Rec.* 1954, **66**, 275.
3. Blaxter, K. L. *Ibid*, 1953, **65**, 835.
4. Marr, T. G., Sharman, G. A. M., Blaxter, K. L. *Ibid*, 1956, **68**, 408.
5. Blaxter, K. L., McGill, R. F. *Vet. Rev. Annot.* 1955, **1**, 91.
6. Blaxter, K. L., Wood, W. A., MacDonald, A. M. *Brit. J. Nutr.* 1953, **7**, 34.

vigorous normal sucking lambs can be suffering from this particular nutritional condition.

Dr. Blaxter and Dr. MacDonald stress the apparent similarity of the histology in our myopathic sheep and in the calves with dietetic muscular dystrophy and they infer from this that the two diseases have a similar ætiology. Later in their letter they themselves say that the changes in muscle are not pathognomonic of vitamin-E deficiency and that muscle tissue has but a limited range of reaction to injury, a point which we made. In these circumstances it seems unwise to conclude from the pathology that there is a similar ætiology.

(2) *The dietetic muscular dystrophy of lambs* which may be controlled by vitamin E, has been known for thirty years in Europe.[7] In North America it was called "stiff-lamb" or "white muscle" disease and was the subject of widespread investigation twenty years ago; more recently the syndrome has been induced experimentally using diets low in vitamin E.[8–12] This disease had a very characteristic clinical picture to which the outbreak in England described by Cotchin[13] closely conforms. This dietetic muscular dystrophy is a disease of sucking lambs aged 3 months and under, the dams of which are unaffected. The onset is rapid with marked stiffness especially in the hindlimbs and the disease is very often fatal in three to four days. Affected muscles are hard on palpation and there are often gritty concretions of calcium phosphate which may be felt. The limbs resist passive movement but the reflexes are not grossly impaired. If the disease is not fatal a substantial degree of recovery usually takes place in a week or two. At necropsy white streaks of degeneration, often calcified, are present in the skeletal and heart muscle. This disease occurs almost exclusively in flocks which have been housed indoors for unusually long periods, owing to inclement weather, and appears at the end of the period of housing or soon after the animals are put outdoors onto pasture—i.e., it is associated with long periods of feeding on poor-quality winter rations with restricted exercise. The disease is prevented and some cases can be cured by vitamin-E therapy.

The natural history of this dietetic muscular dystrophy of lambs is completely different from that of our chronic myopathy of adult pregnant and lactating ewes kept out-of-doors on the best of feeds and suckling thriving lambs; the muscles of our animals are not abnormally hard on palpation, there is no increased resistance to passive movement and we have never seen calcified deposits in the muscles.

(3) *A muscular dystrophy of adolescent sheep* has been described by Marr, Sharman, and Blaxter.[4] This paper, quoted by Dr. Blaxter and Dr. MacDonald in their letter of Oct. 27, appeared after our manuscript was in the press; the disease described bears little likeness to the myopathy in our sheep. It occurred in the North of Scotland in one-year-old sheep (hoggs), which underwent prolonged muscular exertion after a long period of poor feeding mainly on one foodstuff (turnips). Three necropsies showed bilaterally symmetrically affected muscles with "numerous pin-point deposits of calcium in the fibres; here and there these deposits were grouped to form plaques up to 1/4 inch in length." The disease developed in a few hours and the urine was sometimes reddish (the pigment not being identified). Similar syndromes have been reported from New Zealand by Hartley[14] and Dodd.[15] All these present many points of similarity to the well-known paralytic myoglobinuria of horses, which also occurs in ruminants.[5 16] The sheep diseases may also prove to be examples of the acute myoglobinuric muscular dystrophies of exertion.

However, this picture does not resemble our sheep myopathy, which is an insidious chronic affection unconnected with severe exertion, and we have never observed pigmented urine in untreated cases. The myopathy we describe almost always proceeds to a fatal termination over a period of months, even when the animals are kept on a variety of excellent green foodstuffs, whilst many of the sheep suffering from the other syndromes seem to recover.

(4) *A nutritional muscular dystrophy of adult sheep* was encountered by Marston and Peirce[17] in 10 merino sheep which had been kept on experimental rations for periods of three years for studies of phosphorus metabolism. These rations contained raw linseed oil, to the limit of toleration. Some of the sheep developed a stiff and abnormal gait and could only flex their hind limbs with difficulty; the gastrocnemii were hard and rigid. At necropsy these muscles and parts of the sartorii were pale and hard; no other muscles were affected. Histologically there was a hyaline degeneration, fibrosis, and calcification in these muscles. The precise ætiology of this syndrome is obscure, but the condition is quite different from our myopathy and our sheep have not received diets high in linseed oil, or any other unsaturated fats.

For these reasons we think it unlikely that any of these muscular disorders are in any way closely related to the myopathy we describe. Indeed it was partly with these facts in mind that we did not use the term muscular dystrophy to describe the disease we had found, but rather the term myopathy. We have given vitamin E (as α-tocopherol acetate) orally as well as parenterally without any curative effect, but we are repeating this trial on a larger scale in view of the possible rôle of the tocopherols in muscle metabolism. In the meantime, until more information is available, we consider it unwise to draw too close an analogy between the dietetic muscular dystrophies of calves and sheep with the myopathy we describe, for they differ in so many important respects.

We apologise if we have inadvertently distorted the views of Dr. Holman and Dr. Pattison (Oct. 27). As their quoted sentence continues "but clinical symptoms suggestive of scrapie followed by microscopic discovery of vacuolated nerve cells in the medulla oblongata probably constitute sufficient evidence on which to base a positive diagnosis of the disease,"[18] we thought that they did consider that the vacuolated cells clinched the diagnosis pathologically when it had already been made clinically.

In reply to Dr. Walton (Oct. 20), we have made no quantitative study of the cause of the enlargement seen in some of the muscles of our sheep but many muscle fibres in these muscles are swollen and hyaline. We have tried neostigmine and corticotrophin therapy without success. The point which we wished to make regarding Tyler and Stephens's[19] remarkable study of facio-scapulo-humeral muscular dystrophy was not to throw doubt on the accuracy of the diagnosis but to point out that the muscle wasting was obviously not *confined* to the muscles named in the diagnostic label. Regarding the mode of inheritance of the various forms of human muscular dystrophy, with the notable exception of Tyler and Stephens's family, the published pedigrees rarely include more than three generations, which limits the value of the data. With our sheep we should be able to overcome this difficulty; controlled breeding has been in hand for some time and in ten years we hope to have assembled data on at least five generations.

We think that the metabolic and endocrine functions of these myopathic strains of sheep are worth investigating; the disease often becomes manifest after pregnancy, the adrenals are enlarged, the thyroids small, and in some the pituitary has shown a considerable increase of weight which may prove significant.

We should particularly like to thank the many people who have made suggestions as to possible lines of investigation. All their suggestions are most welcome and we shall follow them up as time and opportunity allow.

FRANCES D. BOSANQUET
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H. B. PARRY.

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ARTHRODESIS OF THE GREAT TOE

SIR,—I was most interested in Mr. Crymble's article (Dec. 1) and entirely agree with his conclusions. Some ten years ago I had considerable experience of arthrodesis of the great toe (in those days we were using bone grafts). We found the procedure tedious, fraught with all the pitfalls Mr. Crymble mentions, and giving no better result than arthroplasty.

It may be of interest that some five years ago, in a series of cases of bilateral hallux valgus, conventional Keller's operation was carried out on one side and total removal of the proximal phalanx on the other. Objectively there was little to choose between the results, but without exception the patients preferred the Keller's operation to the phalangectomy.

It is common knowledge that a cheese-paring removal of the base of the proximal phalanx leads to a poor result. It would therefore appear, in conjunction with the above, that there is an optimum level for section of the phalanx in Keller's arthroplasty.

Judging from the radiological appearances of successful arthroplasties, this level is just distal to the narrowest part of the phalanx. In practice this is perhaps best described in the advice offered to those doing the operation for the first time: "The important feature of Keller's operation is to remove enough bone; to do this place the bone-cutters across the phalanx as high (i.e., distal) as you can—and then push them up higher."

Ashton-under-Lyne, Lancs. T. G. BARLOW.

INFECTION IN THE ÆTIOLOGY OF INFANTILE HYPERCALCÆMIA

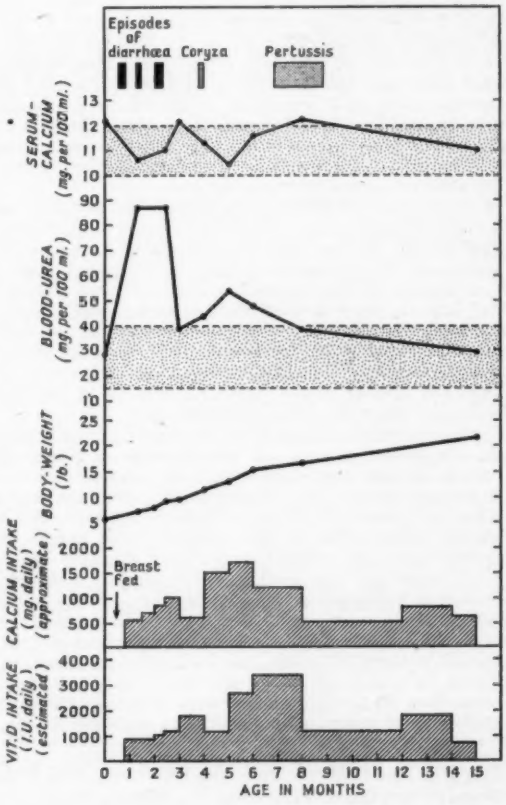
SIR,—Most attempts to explain infantile hypercalcæmia have postulated an increased sensitivity or decreased tolerance to vitamin D, but no conclusive evidence has been produced. The great majority of infants appear to tolerate considerable amounts of either vitamin D_2 (calciferol) or vitamin D_3 (the substance occurring in Nature) without developing hypercalcæmia, and some individual or external influencing factor seems to be required to raise the serum-calcium. Forfar et al.[1] found raised plasma-cholesterol levels and suggested that there might be a disturbance of cholesterol metabolism with the production of a toxic derivative, and that this disturbance might be related to the infection which they found as a preceding factor in 3 of their 5 cases. Hallman et al.[2] have described, in infants with interstitial plasma-cell pneumonia, a hypercalcæmic state which appears very similar to, if not identical with, idiopathic hypercalcæmia. In an unpublished series of 33 cases of idiopathic hypercalcæmia, we have noted a preceding infective illness in 10 (respiratory in 6 and enteral in 4).

We report here some findings derived from the study of 1 infant. This was 1 of a group of 10 normal infants whom we observed from birth for some months, looking for signs of incipient hypercalcæmia.

A.B. was normally delivered. At birth he weighed 5 lb. 6 oz. and was 18½ in. long. He did well for the first few weeks whilst being breast-fed. Soon after the start of artificial feeding he developed diarrhœa which was accompanied by azotæmia, and was followed by a slight but definite flattening of the line of weight-progress. At 9 weeks his urine showed a few pus cells with a scanty growth of *Escherichia coli* and proteus, and he was given a short course of streptomycin and sulphadimidine. Several weeks later he was clinically well but his serum-calcium had risen from 10·6 to 12·1 mg. per 100 ml. (see figure). Apart from coryza at 4 months he then did well until 7 months, when he developed pertussis and was given magnesium hydroxide for constipation. At this time there was a further flattening of the line of his weight-progress, and at 8 months his serum-calcium was 12·2 mg. He then apparently made good progress until he was last seen at 15 months when he was normal in all clinical respects, weight 21³/₄ lb., length 29 in., serum-calcium 11·0 mg. per 100 ml. Taking into account his small size at birth, we consider his stature reasonable for his age.

The main point of interest in this case was the elevation of the serum-calcium above 12·0 mg. per 100 ml. found on two occasions. On each of these there was a preceding infection and a check in growth progress as seen on the weight-chart. The first high serum-calcium level was also preceded by a course of sulphadimidine, which Harris[3] cited as a possible aggravating factor in several cases of hypercalcæmia. The intakes of calcium and vitamin D were moderately high and rising at the time of the first episode, and considerably higher in the period leading up to the second serum-calcium elevation. After this there was a definite fall in both. The intakes of both were not outside the ranges known to be well tolerated by normal babies.

The findings in this single case do no more than indicate a possible rôle for infection in determining the onset of hypercalcæmia in certain children. A coincident lessening in the rate of growth might diminish the use of calcium by the tissues and so raise the level in the serum. Another mechanism is suggested by the finding by Anderson, Brewis, and Taylor (personal communication) of signs of adrenocortical dysfunction in cases of idiopathic hypercalcæmia. This could provide a link with an



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infective factor in the ætiology, and with the known tendency of these cases to respond to cortisone.[4 5]

We are grateful to Prof. F. M. B. Allen, Dr. J. A. Smyth, Dr. E. G. Brewis, and Dr. J. Anderson for their interest and advice; to Mr. R. G. Wood for constructing the diagram; and to Miss J. C. Smith for secretarial assistance.

South Shields. R. D. G. CREERY.
Belfast. D. W. NEILL.

VENTILATION OF OPERATING-THEATRES

SIR,—In your leading article of Dec. 8 you make a cogent case for plenum ventilation, but do not add any recommendations concerning the disposition of the air-inlets.

The disposition of these is important. The clean air should be so introduced as to maintain a positive pressure in the area of the operation wound, thus protecting it from contamination by currents of dirty air. The air-inlets should be at the cephalic and caudal edges of the operating-theatre lamp so that the air-current, directed at the wound, avoids the heads of the surgeon and his assistant. Accessory, adjustable air-vents could be arranged to pressurise other important aseptic areas such as the instrument trolley.

Ventilation systems with adjustable vents as used in ships would be suitable, not only in operating-theatres, but also in the wards and dressing-rooms. In the wards vents might with advantage be fitted over each bed. Such ventilation systems, being in large-scale production for the shipping industry, should not prove prohibitively expensive.

Northampton General Hospital. A. M. N. GARDNER.

INSULIN ZINC SUSPENSIONS

SIR,—Your leading article of Nov. 17, in which you state that "there seem now to be good reasons to use the insulin zinc suspensions for all new cases of diabetes requiring insulin, so that G.I., P.Z.I., and N.P.H. insulins should gradually fall into disuse as new generations of diabetics grow up" has been criticised by Professor Tunbridge and Dr. Paley in Leeds (Dec. 1) and Dr. Croom and his colleagues in Edinburgh (Dec. 8). My experience with the lente trilogy has been so satisfactory that I agree with the views expressed by you.

In a series of 163 cases [6] good control was obtained in 142 cases by the use of lente insulin (range of daily dosage 12–140 units). 19 cases needed in addition a small dose of semilente to control post-breakfast hyperglycæmia, whilst 2 cases needed a small amount of ultralente, in addition to the basic dose of lente, to obtain good fasting blood-sugar levels. Since this series was studied the number of cases under treatment with the lente group has risen to about 300, and we have had no reason to change our opinion that "these insulins are a decided advance on other available preparations."

I was interested to read that the Edinburgh workers have abandoned the use of lente insulin in pregnant diabetics because they found it to be inferior to P.Z.I. and soluble insulin. In 27 pregnancies here the lente insulins have provided the strict diabetic control which I agree is "imperative in these cases." The degree of diabetic control is estimated by daily multiple urine examinations and by weekly or fortnightly multiple blood-sugar estimations in a given day. The fœtal survival-rate is surely the best index of the satisfactory nature of diabetic control, and, using this standard, the outcome of these 27 cases has been very satisfactory. Thus of 28 babies (twins in one case) the gross fœtal survival was 20 (71%). There were 4 neonatal deaths (including 1 of the twins), 3 abortions, and 1 stillbirth. Excluding the 3 abortions and the stillbirth because the baby was dead in utero when the mother was referred to our service, the fœtal survival figure becomes 20 out of 24 (83%). If the cases be further analysed to exclude 10 pregnancies in which the insulin requirement was less than 40 units (almost any insulin preparation would have suited such cases) there are 17 pregnancies in which the daily insulin requirement ranged from 60 to 160 units. In these there were 2 abortions, 1 stillbirth, and 12 live births. Excluding the abortions and stillbirth as before, the fœtal survival figure is 12 out of 14 (86%).

The series is small because lente insulin has been available for less than three years. However, I feel that it does show that very satisfactory control can be procured in pregnant diabetics by the use of the lente insulins.

National Maternity Hospital, Dublin. M. I. DRURY.

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Obituary

GEORGE WILLIAM WATSON

M.D. Lond., F.R.C.P.

Dr. Watson, emeritus professor of medicine in the University of Leeds, consulting physician to the General Infirmary, and trusted colleague of three generations of general practitioners, died on Dec. 11 at the age of 79.

He was born at Cowling, near Keighley, and he went to Keighley Grammar School. In 1894 he won the West Riding county scholarship; and even before he left school he had given evidence of a remarkably orderly and inquiring mind, as the following extract from *Nature* (Nov. 8, 1896) shows:

"He is a bad workman who grumbles at his tools, and the student of science who neglects research because he does not possess apparatus ready made and varnished by the instrument maker, lacks the spirit of the investigator. Test the efficiency of the things at your disposal is good advice, for the knowledge and experience gained by the direct communion with nature, even through the roughest apparatus, is a very valuable educational training. Because this is so, and because we hold our highest function to be the encouragement of research, we have pleasure in noting that 'a Yorkshire lad,' Mr. G. W. Watson, of Keighley, has obtained some wonderfully good Rontgen photographs by using an old home-made Wimshurst machine to illuminate a Crookes' tube. The machine gave a spark about $1^3/_4$ inches in length, and was without condensers. With this primitive equipment, good radiographs of the bones of the hand were obtained in twenty minutes. One of these pictures, and also a radiograph of an abnormally developed elbow, have been submitted to us, and both are very creditable productions. The definition is unusually clear, and the hollow structure of the bones is distinctly visible. Mr. Watson's success may induce others to see what they can do with simple means."

In 1897 he entered the Leeds medical school, and after qualifying in 1901 he continued his studies at the Middlesex Hospital in London and in Vienna. He proceeded to the M.D. Lond. in 1903 and took the M.R.C.P. two years later. During these years he held resident appointments at the Leeds General Infirmary and later became medical tutor and registrar. In 1908 he was appointed to the staff of the Leeds Public Dispensary, and in 1911 he became assistant physician to the Infirmary. He was elected F.R.C.P. in 1915.

During the 1914–18 war he served in the R.A.M.C. and was attached to the 2nd Northern General Hospital, attaining the rank of brevet lieut.-colonel. Soon after his return to civilian life in 1919 he was appointed full

physician at the Infirmary, and in 1924 to the chair of clinical medicine. In 1933 he succeeded to the chair of medicine, and he held this appointment until 1938 when he retired, as a colleague put it "by process of time, not age." In the busy first years of his nominal retirement he not only continued his large private practice but examined for the Conjoint Board, and served as chairman of the Infirmary faculty in Leeds and as a member of the council of the Royal College of Physicians in London. During the late war he was regional consultant adviser in medicine to the Emergency Medical Service.

C. W. V. writes:

George Watson's powers of diagnosis were great and were due largely to the training of his five senses—and some of us thought he had a sixth sense—and he never ceased to teach his students along these lines of personal observation. Possibly his greatest strength lay in his refusal to be influenced by the opinion of others until he himself was satisfied that their diagnosis was right. The coming of the antibiotics and acute specialism was to George Watson a distinctly disturbing development. To him anything approaching a preliminary complete routine investigation before a full personal examination was anathema. He was conservative in his views, but he never hesitated to recommend extreme measures if he felt they were necessary. His one aim and object was to relieve pain and anxiety, to renew hope and confidence and, wherever possible, to spare the patient unpleasant and exhausting investigations.

He did not take kindly to the National Health Service. He was a believer in robust individualism and independence, but he was the last man to refuse help where help was needed. He refused to alter his opinion, which he expressed strongly at the time, that all that was necessary was for the general practitioner to be given laboratory and X-ray facilities without having to send their patients to the hospitals and clinics. He was an active member of the West Riding panel committee and was indeed a great source of strength in its endeavour to improve conditions for patients and doctors. He took a great interest in the welfare and training of nurses, and for many years he was a member of the nurses committee at the Leeds General Infirmary.

He loved music and was an accomplished pianist, and for some time was organist at Cowling Church. For many years he found great relaxation in wood and metal work in which he was a real craftsman. He was of a retiring nature and hated any kind of publicity. He had a keen sense of humour and was an accomplished teller of Yorkshire stories. Many generations of students owe him a debt of gratitude for all they learned from him and the example and the high standards he set in all his professional work and activities.

Dr. Watson married in 1919 May Isabel Armstrong Nicholson. Their elder son was killed while serving with the R.A.F.

CHARLOTTE LEIGHTON HOULTON

C.B.E., M.D. Lond., F.R.C.O.G.

MANY medical women in India today owe the inspiration of their training to Charlotte Houlton, who was chief medical officer of the Women's Medical Service in India before her retirement in 1939. She died on Dec. 13 at the anglican convent of St. Francis in Whitby, at the age of 74.

She was the youngest daughter of John Houlton of Hull and qualified from the Royal Free Hospital School of Medicine for Women in 1911. Two years later she went to India to work under the Countess of Dufferin's Fund, and when the Women's Medical Service was started she became its first member. In 1917 she took her M.D. and quickly established her reputation as an obstetrician and gynæcologist. She served on the staffs of the women's hospitals at Agra, Delhi, and Simla, where she was medical superintendent of the Lady Reading Hospital. She also held the appointment of principal and professor of gynæcology at the Lady Hardinge College at Delhi. In 1925 she was awarded the Kaisar-i-Hind medal. In 1937 she was elected F.R.C.O.G., and on her retirement in 1939 she was appointed C.B.E.

During the late war she gave some years of service to the Community of St. Stephen at Delhi, and after she returned from India she worked in London as medical secretary of the Society for the Propagation of the Gospel. At Whitby, until she was crippled by arthritis, she entered actively into the work of the convent. She was a valued member of the Medical Women's Federation and took a practical interest in the welfare of its overseas members.

D. C. W. writes: "Charlotte Houlton bore suffering with such patience that in retrospect it is possible to think always of her as a very happy person, and her many friends will remember her as a woman of great integrity, unselfishness, and charm."

HUBERT WYERS

M.A., M.D. Glasg., D.I.H.

Hubert Wyers, who died on Dec. 11, at the age of 56, will be a loss to medicine in general and to industrial medicine in particular. His reputation for wisdom, knowledge, and leadership was increasing rapidly among his colleagues.

He was born in Birmingham, where he attended King Edward's Grammar School. His parents later moved to Glasgow, and, after leaving school at an early age, he became a moulder in an iron foundry. No doubt he was a good moulder, but his real interests lay in other directions. He attended night classes, and he was considered an oddity in the foundry because he used to read Greek in the intervals between "melts." He managed to attend Glasgow University, where he graduated M.A. in 1927 and M.B. two years later.

After holding house-appointments at Glasgow, and a clinical assistantship at the Royal Westminster Ophthalmic Hospital, he settled at Rainham in Essex, where he quickly built up a large practice. But, with his practical experience of factory life, it was natural that he should gravitate to industrial medicine. He was appointed examining surgeon (later called appointed factory doctor) for the factories in his area, and towards the beginning of the late war he gave up general practice and devoted the whole of his time to industry. With characteristic foresight he chose factories which would give him all-round experience. He became medical officer to May & Baker Ltd., Dagenham; the Cape Asbestos Co. Ltd., Barking; Murex Ltd., Rainham; and Lacrinoid Products Ltd., Gidea Park. At the same time he held the post of clinical assistant in the department of dermatology at Oldchurch Hospital, Romford. In 1947 he was awarded the M.D. with commendation for his thesis on asbestosis.

Wyers was editor of the *Transactions of the Association of Industrial Medical Officers* from its start in 1951 until his death, and he was chairman of the London Group of the association. For three years he was examiner for the D.I.H. of the Conjoint Board. His published work included articles on vanadium and metol poisoning, the chemistry and toxicology of colour, and industrial skin diseases. "His writings were packed with historical references and classical allusions which were handled lightly and sensibly, but he was primarily a clinician in the long tradition of Paracelsus, Ramazzini, Thackrah, Legge, and Collis. He was more interested in individuals than in groups and he was jealous of the traditions and good name of medicine." As a physician, "he was approachable and serene, sensitive and sympathetic, careful, and highly competent. He would go to infinite trouble about all his patients, whether they were workmen or his friends, who often consulted him."

A. I. G. McL. writes:

Hubert Wyers was a striking example of the value of a classical education as a preparation for a medical career and he stood out from his contemporaries by reason of his wide sympathies, interests, and learning. By any standards, he was a remarkable man. Not only did he know the Greek and later philosophers intimately but his knowledge of nearly all branches of medicine was profound. By reason of his well-stocked mind he simply could not help writing in clear and arresting prose. His short leading articles in the

Transactions of the Association of Industrial Medical Officers are gems of the graceful allusive style and they contain wit, wisdom, and erudition in delightfully balanced proportions. His erudition was indeed formidable and some members of the association have been known to complain that his leading articles were too learned. Who amongst them had ever heard for instance of "Walafrid Strobo, (who) writing from his garden at Reichenau in the 9th century teased his friend Strobus for his 'Irish fashion' of wandering"?

But he could write with equal ease and grace about presbyopia and government by "presbyters" and "elders," Neapolitan Nereides, the deep courtesy of Spain, an epidemic of psittacosis transmitted by the fulmar petrels in the Faroes, and more prosaic subjects such as developments in industrial health, dermatitis, the synchrotron, or social medicine. Even when writing of these workaday subjects, his prodigious learning would creep in, and there would be apt quotations from most of the European languages including Gaelic and Anglo-Saxon and from the poets of all ages. It is not too fanciful to say that he could put a subject in a nutshell and give it a feeling of infinite space. Indeed he had all the qualities of the great essayists.

He was a founder member of the small Thackrah Club which meets twice a year to study an occupation and the philosophy, but not the politics, of occupational medicine. It was characteristic of Hubert's diversity of interests that on one occasion he took us to Colchester, where we went out with the oyster fleet early in the morning to dredge for, and sample, the oysters, and in the afternoon we were told about Roman Britain by Mr. M. R. Hull, the director of the Colchester Museum. At dinner that evening, which naturally began with oysters, Mr. Hull and Hubert fascinated us with a lively and witty discussion of life in Roman Britain and kindred subjects. On the way home next morning he took us to a leper colony where we studied the clinical and epidemiological aspects of leprosy and the remarkable advances in treatment of recent times.

His last leader in the July, 1956, number of the *Transactions* was on bronchitis and as usual it was eminently wise and quotable. Of the difficulty of defining bronchitis he wrote: "Evidently bronchitis is an art and not a science. The attempt to define a pretty girl results in equal frustration, yet professors and students alike have no difficulty of recognition in the individual case."

This brings me to the difficulty of defining Hubert Wyers, and I am reminded of Somerset Maugham's short sketch entitled "The Grand Style" in *On A Chinese Screen*. It is about an old doctor who had lived in China for fifty years and he too had had a classical education. "In his youth he had been taught much useless learning, the classics of Greece and Rome, and they had given a foundation to his character which in the present is somewhat rare. . . . But how can I analyse the subtle quality which distinguished this old man? Read a page of Swift: the words are the same as those we use to-day and there is hardly a sentence in which they are not placed in the simplest order; and yet there is a dignity, a spaciousness, an aroma, which all our modern effort fails to attain; in short there is style. And so with him; there was style, and there is no more to be said."

CHARLES DAMIEN LOCHRANE

M.D. Edin., F.R.C.S.E., F.R.C.O.G

Mr. C. D. Lochrane, consulting surgeon to the Derbyshire Hospital for Women, died at his home at Nairn, on Dec. 13, at the age of 75. Born at Busby, near Glasgow, he was educated at Stoneyhurst, and then entered Edinburgh University where he qualified M.B. in 1904, proceeding to the M.D., with high commendation, in 1908. In 1906 he became a fellow of the Royal College of Surgeons of Edinburgh, and in 1929 he became a founder fellow of what is now the Royal College of Obstetricians and Gynæcologists.

In 1907 he succeeded his elder brother in his practice, and as honorary surgeon to the Derbyshire Hospital for Women, and thereafter his main interest was the welfare of his hospital, which under his leadership developed from an institution of a few beds in some private houses to the present first-class hospital which was opened in 1929. Lochrane was a most conscientious surgeon and never took anything for granted; he was an excellent histopathologist and always studied for himself every section of tissue sent for examination, forming his own opinion. He was well known to an earlier generation of gynæcologists and had been president of the Midland Gynæcological and Obstetrical Society. In addition, for many years he was a vice-president of the section of obstetrics of the Royal Society of Medicine. He was also prominent in the activities of the Derby Medical Society and was its president in 1927.

G. F. K. writes:

Charles Lochrane was an extremely handsome man with great personality and charm, and his patients loved him. He was a devout Roman Catholic with a strong sense of duty, and not given to compromise. His many interests included a deep knowledge of history, especially that of his own country, and, perhaps rather naturally, his bias was in favour of the Jacobite cause. He was also something of a piper, and although not a native Gaelic speaker he went to much trouble to learn the language, and his perseverance in due course made him quite fluent. His sound judgment of men and affairs, his erudition, and above all his sense of humour made him a delightful companion, and his former colleagues, including the many house men and women who learnt so much from him (for he was a born teacher), will not easily forget the morning sessions in the staff common-room, when he would distil wisdom and wit over a cup of tea.

In 1948 he came to the conclusion that age and infirmity justified his retirement, but there is no doubt he also thought, probably rightly, that his strong individualism and the new health service were incompatible. When he retired he left Derby and went to live in his native Scotland. Unfortunately his later years were clouded by a succession of illnesses, which characteristically brought about only a token limitation of his activities.

Mr. Lochrane is survived by his wife and two sons.

Diary of the Week

DEC. 30 TO JAN. 5

Wednesday, 2nd

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1
8 P.M. *Surgery.* Mr. E. A. Crook: Non-specific Conditions of the Large Intestine. (Presidential address.)

Thursday, 3rd

ROYAL SOCIETY OF MEDICINE
8 P.M. *Neurology.* Dr. J. N. Walton: The Amyotonia Congenita Syndrome; Dr. G. H. Bourne, Miss E. B. Beckett: Histochemistry of Human Muscle.

Friday, 4th

ROYAL SOCIETY OF MEDICINE
5.30 P.M. *Anæsthetics.* Dr. O. P. Dinnick, Mr. J. S. Tomkinson, Dr. G. C. Steel: Anæsthesia for Obstetrics—an Evaluation of General and Regional Methods.

ROYAL MEDICO-CHIRURGICAL SOCIETY OF GLASGOW
8.30 P.M. (Royal Faculty of Physicians and Surgeons of Glasgow.) Prof. Stanley Alstead and staff: Evaluation of New Drugs.

Appointments

BEASLEY, R. W. R., M.B. Lond.: assistant M.O., Southern Gas Board.

CANNON, P. G., M.B. St. And., D.P.H.: school M.O., Staffordshire, M.O.H., Biddulph and Leek.

CROWLEY, P. J., M.B. Camb., D.C.H., D.P.M.: senior assistant psychiatrist, Saxondale Hospital, Radcliffe-on-Trent, Notts.

LINFORD REES, W. L., M.D. Wales, M.R.C.P., D.P.M.: physician, department of psychological medicine, St. Bartholomew's Hospital, London.

The Hospital for Sick Children, Great Ormond Street, London

CARTER, A. P., M.B. Lond.: house-surgeon.

FARRELL, J. C., M.B. Sydney, M.R.C.P., D.C.H.: house-physician.

SHANNON, F. T., M.B. N.Z., M.R.C.P., M.R.A.C.P.: house-physician.

WYNNE-DAVIES, RUTH, M.B. Lond.: house-surgeon.

Births, Marriages, and Deaths

BIRTHS

JACKSON.—On Dec. 13, at Queen Charlotte's Hospital, to Margery (née Taylor), wife of Philip Jackson, M.D.—a daughter.

WATSON.—On Oct. 3, 1956, to Moira, wife of Dr. John S. Watson, M.R.C.P., of 22, Cambalt Road, Putney—a daughter (a sister for William).

Notes and News

HOSPITAL COSTS IN SCOTLAND

THE average cost of maintaining an inpatient in the major teaching hospitals of Scotland during the year ended March 31, 1956, was £17 6s. 10d. a week, and in the other general hospitals £16 0s. 6d.—increases of 5% and 6·9% over the comparable costs in the previous year. These figures are given in the annual analysis of the running costs of Scottish hospitals.[1] As we indicated in discussing costs in England and Wales,[2] the apparent increase is all or mostly accounted for by decreasing purchasing-power of the pound. In Scotland the proportion spent under each heading (salaries, provisions, maintenance, &c.) was about the same in 1955–56 as in the previous year.[3] The average cost for each outpatient attendance, including specialist services, was 8s. 8d. Hospital authorities have been asked to investigate differences in costs at comparable hospitals and to report their findings to the Department of Health.

RESISTANCE TO INSECTICIDES

AT a meeting of the Royal Society of Tropical Medicine and Hygiene in London on Dec. 13, Mr. J. R. BUSVINE, D.SC., discussed insecticide-resistant strains of insects of public-health importance. The housefly, certain species of anopheles (some of them important vectors of malaria), certain culicine mosquitoes (including *Aëdes ægypti* in Trinidad), and some strains of lice, bed-bugs, fleas, and cockroaches have shown high degrees of resistance to the chlorinated hydrocarbons and the other insecticides. It has become evident that resistance may be transmitted genetically, and possibly resistant genes may be of two kinds—those giving generalised resistance, and those giving highly specific resistance to a particular type of poison (possibly through a detoxifying enzyme or the introduction of a metabolic system unaffected by the poison). Development of resistance in an insect population is influenced by intensity of selection—i.e., the size of the population exposed to the insecticide and the proportion killed—and by the numbers of generations per year. Counter-measures to prevent the development of resistance have been suggested—intensification of spray campaigns (but Dr. Busvine suggested that this might lead to more rapid development of resistance), or alternation or mixture of insecticides. We cannot yet base our anti-resistance measures on any sure fundamental knowledge.

Prof. G. MACDONALD emphasised the practical importance of resistance, and urged that laboratory work on colonies of insects, in which the genetics of the subject could be investigated, should be accompanied by field work by teams competently trained to detect the distribution and variation of the genes, the speed of selection, and the rate of disappearance—all variables which cannot be studied except in the field.

Mr. G. DAVIDSON stressed that resistant strains of anopheles have proved more vigorous and hardy—and even better vectors of malaria—than susceptible strains. Dr. BUSVINE, on the other hand, thought that resistant genes are probably on the whole unfavourable; otherwise these would be more commonly found in Nature.

Mr. P. F. MATTINGLY declared that in this problem there are involved fundamental biological principles which relate to processes much wider than that of resistance alone. We are very ignorant of insect genetics, and we must study the behaviour of insect populations. For instance, the resistance of *Anopheles gambiæ* in Northern Nigeria may be influenced by the fact that the country is not ideal for that mosquito, and that to maintain what is at best an uneasy balance with its environment it has developed greater plasticity in its powers of dealing with unfavourable conditions.

Dr. R. F. BRADBURY, as a chemist, remarked that resistance involves other mechanisms than detoxification—even evaporation from the body-surface.

HOSPITAL DENTAL UNIT AT SUNDERLAND

Mr. R. H. Turton, Minister of Health, opened a dental unit at Sunderland General Hospital on Dec. 14. The unit, which cost nearly £20,000, consists of an outpatient department and a laboratory, and will serve the Sunderland and Cherry Knowle hospital management committee groups. It will provide complete dental treatment for their long-stay patients, emergency treatment for short-stay patients, and such other dental treatment as is part of their medical care, specialist diagnosis and treatment for outpatients, routine dental treatment for patients with open tuberculosis, and routine dental treatment for hospital staff.

The scheme, which Mr. Turton described as "a new and important development in hospital dentistry," is the first experimental step towards implementing the recommendations of the Ministry's Standing Dental Advisory Committee for the improvement of the hospital dental services. The committee's further recommendations include proposals to form in each region a dental advisory committee with access to the regional hospital board, and the appointment by the board of a dental officer with responsibility for coöperation between hospital authorities, executive councils, and local authorities; and a committee of this kind has been formed in the Sunderland area.

SAFETY AT HOME

IN Britain some 18,000 deaths each year result from accidents; and about half this total is accounted for by accidents in the home. Major-General B. K. Young, director-general of the Royal Society for the Prevention of Accidents, cited these figures in addressing the Royal Society of Arts on Dec. 5. More people, he said, are killed at home than on the roads, but nothing like as much publicity is given to home accidents. Most victims are under 5 (11%) or over 65 (70%). Most of the fatal injuries have one of four causes: falls (61%), poisoning (14%), burns and scalds (11%), and suffocation (10%). Some general causes of the increase in recent years are: the large number of married women who go out to work (they are liable to fatigue, and can supervise their children less well); the increasing number of old people; and the increase in the use of gadgets, some of which are dangerous, and of inflammable synthetic materials.

The number of accidents in transport and industry has fallen considerably in the past twenty years, and it is hoped that the same result can be achieved for home accidents. The campaign of prevention is to be in three stages: a survey to define more exactly the circumstances causing accidents; a publicity campaign; and finally the acceptance of the correct approach so that the need for propaganda will cease. The first stage has begun. The R.S.P.A. has a national home safety committee, and the House of Commons a home safety group; and the Home Office has set up a standing inter-departmental committee. About eighty local home-safety committees have been formed. It may be possible to enforce safe standards in the products of industry; but it will be harder to continue enforcement in the home, for enforcement implies inspection, which would be resented far more in the home than in the factory. But, said General Young, the most important activity will doubtless be education of the public.

University of Oxford

On Dec. 15 the following degrees were conferred:

B.M.—G. H. Fowler, D. C. S. Hutchison, A. J. Pemberton, M. S. Whitehouse, H. G. Nicol, W. D. Stone, E. D. A. Hay, Y. E. Hsia, S. R. Richardson, E. W. Sturton, J. B. Dawson, B. A. Roper, E. M. Swannie, Thomas Osborn, F. P. Greenwell, R. D. Last, R. C. Poyntz-Wright, J. B. Sayer, T. P. Snell, G. C. Rivett, M. W. B. Bradbury, R. L. Buchanan, D. N. Croft, P. F. Binnion, P. S. H. Browne, C. B. Clay, R. W. Griffith, J. R. Cousins, D. R. Laney, Joyce I. A. Little, Rosemary E. Troughton.

University of Durham

On Dec. 15 the degrees of M.B., B.S., were conferred on the following:

*Elizabeth Arnott, J. B. G. Arthur, S. A. Banful, B. A. Black, *Bernard Ehrlich, Alwynne Gray, Neil Manson, Emily S. S. Mochrie, N. L. K. Robson, J. A. Smith, J. K. Todd, H. N. Williams.

* In absentia.

University of Bristol

At a recent examination for the degrees of M.B., CH.B., the following were successful:

B. H. Burns, J. H. Chick, I. E. Doney, J. B. Griffiths, H. G. Handel, Colin Hemming, R. W. Hiles, Evelyn B. Horton, S. C. Jordan, D. J. Mahy, John Martyrossian, Penelope Neville, W. D. L. Revill, G. B. Simon, Sara Waters, T. C. Waters (*pass*); J. S. A. Ashley, Edna M. Dumbell, M. J. Lewis, R. D. Neale, Hilary S. Prowse (*in group I completing the examination*); W. B. Whisker (*in group II completing the examination*).

St. Teresa's Hospital, Wimbledon

On Dec. 5 at this hospital Sir Horace Evans opened a private wing of 18 beds for obstetric patients.

1. H.M. Stationery Office. 10s. 6d.
2. See *Lancet*, Dec. 15, 1956, p. 1257.
3. See *Ibid*, 1956, i, 290.

University of Edinburgh

On Dec. 14 the following degrees and diplomas were conferred:

M.D.—*A. D. Bain, †Abraham Goldberg, ‡A. M. Merriweather, ‡R. A. Millar, §Philip Pinkerton, §Boris Ruebner, *H. T. G. Strawbridge, ‡John Wilkinson.

* Highly commended. † Gold medal.
‡ In absentia. § Commended.

M.B., Ch.B.—N. F. Anderson, Roger Barclay, S. S. Gibson, Jacqueline A. F. Hamilton, Margaret M. Harkness, J. F. Killick, E. G. Lucas, I. R. Lurie, John MacLean, J. W. Meikle, J. R. Moorhouse, George Sanderson, G. J. S. Simpson, A. M. Smith, K. C. Stuart, Kassaye Tesfaye, William Westwood, D. I. Williams, J. T. Wilson.

D.P.H.—J. R. White.

D.M.R.D.—W. P. Cockshott, E. O. L. Hoskins, G. F. A. Howie, J. S. Macdonald, A. J. McKendrick.

D.M.R.T.—F. A. Beale.

Lewis Cameron postgraduate prize.—This price (£45) may be awarded in July, 1957, to a graduate of not more than five years' standing for original work on the diagnosis of disease. Papers must reach the dean of the faculty of medicine by April 5.

Royal College of Surgeons of England

At a meeting of the council on Dec. 13, with Sir Harry Platt, the president, in the chair, Mr. R. J. Cann (Guy's) and Mr. J. H. Doggart (Moorfields) were re-elected, and Mr. A. B. Nutt (Sheffield) was elected, to the court of examiners. Prof. J. S. Barr (Massachusetts General Hospital) was appointed Robert Jones lecturer for 1957.

Diplomas of fellowship were granted to the following:

R. D. Nicholson, J. S. Conway, P. A. Feldman, D. K. Evans, J. L. Wilkinson, D. G. Jenkins, J. M. Lancaster, T. L. Bradbeer, R. Q. Crellin, D. M. Riddell, K. H. Stone, J. S. Mousley, G. A. Marin, R. M. Kirk, K. F. D. Sweetman, Alfred Standeven, R. B. Brenan, E. R. Monypenny, Mary F. Richardson, M. Y. Sheppard, Rasamay Ganguly, Frances Selesnick, D. M. Caird, M. R. Mistry, J. I. de B. Leembruggen, P. C. Leeson, W. M. Ross, Hussein Talib, S. J. Cohen, M. V. Graham, Abdul Rashid Khan, A. H. D. McJannet, Chelliah Mylvaganam, W. R. Rogerson, J. N. S. Taylor, Eoin Aberdeen, E. G. Currow, S. M. Drance, Adwaita Kumar Ganguli, W. D. Graham, T. G. O'Driscoll, D. S. C. Procter, T. L. Sarkin, R. T. Sears, Mary E. Shelswell, A. J. Walt, B. N. Bailey, Asok Kumar Banerjee, F. S. Bowly, J. M. Brudenell, R. G. Dykes, Bruce Geaney, N. E. Goodwin, Jack Stevens, Mohamed Ezzat Mohamed Tawfik, P. C. Tuckfield, J. N. Ward, G. I. Young, R. F. Brown, J. I. Burn, T. I. Cope, Israel Jaffe, B. D. Leckie, Sapugahawattege, Henry Piyadasa Nanayakkara, W. H. C. Scott, A. B. Seth-Smith, D. E. Sturdy, C. J. Anders, Ali Muhammad Haji Ansari, J. P. Blandy, G. J. Clowes, D. C. Evans, Felix Huber, S. J. Iceton, H. H. Lawson, J. D. G. McNeil-Smith, G. C. Northcott, Revanasiddappagouda Basappagouda Patil, Robert Paton, R. F. Power, Reuben Silberman, T. E. C. Williamsz, A. S. Wood, Wypke Wypkema, David Zuñi, Robert Britten-Jones, T. J. B. Connelley, A. G. Cousins, J. B. Dillane, R. V. Fiddian, J. A. Fleming, Jacob Nayman, J. H. Pryor, D. M. V. Rea, R. M. Standish-White, D. O. Berg, W. J. Cook, M. J. Inglis, G. P. Randle.

A diploma of membership was granted to Miss C. A. Russell.

Royal College of Physicians of Edinburgh

The following office-bearers have been elected for the coming year:

President, Sir Stanley Davidson; vice-president, Dr. A. Rae Gilchrist; members of council, Dr. J. D. S. Cameron, Dr. J. G. M. Hamilton, Dr. J. L. Henderson, Dr. J. Halliday Croom, Dr. J. Laurie; treasurer, Dr. J. Alastair Bruce; secretary and registrar, Dr. Henry Matthew; hon. librarian, Dr. John Ritchie.

Mr. Geoffrey Pendrill, M.A., A.L.A., assistant librarian of the Wellcome Historical Medical Library, London, has been appointed librarian of the college.

Royal College of Surgeons of Edinburgh

At a meeting of the college held on Dec .12, with Sir Walter Mercer, the president, in the chair, the following were admitted to the fellowship:

Johannes E. B. Aling, Ali Muhammad Han Yakub Ansari, A. W. Beasley, F. H. Beddow, James Blundell, Shakuntla Prem Chandra, D. B. Chrisp, J. M. D. Crook, Sujit Kumar Das, H. L. Duthie, Tahrir Ismail El-Gailani, D. C. Evans, A. V. Foote, Adwaita Kumar Gangopadhyay, E. R. Ghabbour, Hassan Mahmood Hathout, W. R. Holmes, James Hughes, Anuko Edenma Ikomi, Tehemtan Kawashaw Jagose, T. S.-B. Kelly, Kesar Singh Kochhar, James McArthur, I. W. A. McFarland, A. H. D. McJannet, I. J. MacQueen, G. A. Marin, Andrew Mulholland, Jacob Nayman, Manohar Krishna Panandikar, Rasik Chhotabhai Patel, Kashi Nath Pathak, Robert Paton, J. A. Riedel, J. B. Ritchie, W. V. Rowe, T. L. Sarkin, C. H. Schulman, Chandra Lalbhai Shah, Raghavendra Prasad Singh, Mary E. G. Skinner, A. N. Smith, Robert Strang, E. C. Watson, C. U. Webster, C. H. Wolpe.

Society of Apothecaries of London

At recent examinations the following were successful:

M.M.S.A.—M. R. Fell, E. J. Turner.

L.M.S.S.A.—M. E. Braithwaite, H. Segal, L. R. Butler-Manuel, K. Pritchard, J. G. Pritchard, J. D. Martin, W. R. Gibson, J. B. Dawson, D. A. Wheelwright, E. G. Beausoleil, J. Barrand, T. H. Almond, J. L. Beecker, M. E. Port, M. Austin.

Institute of Dermatology, London

A semi-permanent exhibition by Dr. H. Haber on histology of normal skin will be open at this institute, Lisle Street, W.C.2, from Jan. 3 to 28.

Central Council for the Care of Cripples

This council is arranging a study tour to follow the International Congress for the Welfare of Cripples, which is being held in London from July 22 to 26. Further details will be available soon from the council, 34, Eccleston Square, S.W.1.

Cambridge Graduates' Medical Club

A dinner of this club will be held at the Royal College of Surgeons, Lincoln's Inn Fields, London, W.C.2, on Wednesday, Jan. 23, at 7.30 p.m. Members who have not yet had a notice should apply to Mr. J. H. Lees Ferguson, 1, Upper Harley Street, N.W.1.

North East Clinical Society

This society has been revived and will meet at 2.30 P.M. on the third Thursday of the month at the Prince of Wales General Hospital, Tottenham, London, N.15. The next meeting will be on Jan. 17. The chairman is Dr. Bruce Williamson, and the joint secretaries are Dr. Joan Chappell and Dr. I. C. Gilliland (22, Harley Street, W.1.).

Anglo-French Exchange Bursaries

Short-term grants for work in France are offered again this year to British doctors and medical research-workers by the Institut National d'Hygiène, Paris. Further details can be had from Dr. G. W. Wolstenholme, Ciba Foundation, 41, Portland Place, London, W.1. The closing date for applications is Feb. 2.

Medical War Relief Fund

During the year ended Aug. 31, 1956, the fund distributed £2407. 15 awards for education amounted to £1276, 8 awards for maintenance to £887 and 6 awards for special gifts to £244. Since it was started sixteen years ago the fund has distributed £83,000. It is hoped that the present available funds will enable boys and girls now receiving help to complete their education.

Heberden Society

On the first day of its annual general meeting on Dec. 14 and 15, this society dined in the hall of the Society of Apothecaries. Sir Russell Brain, F.R.C.P., proposed The Society, whose function, he thought, was to be articulate about articulations. He had been looking, he said, at some back numbers of the *Philosophical Transactions of the Royal Society*, in which Heberden had written an account of the effect of lightning at South Weald and had given support to the idea of conductors. (He also came across two consecutive papers by other authors whose titles were arresting seen side by side in 1956—"account of Egyptian mummy inspected in 1863" and "sequel to case of Mr. Butler of Moscow.") Today, Sir Russell observed, we had harnessed lightning to the electron microscope; and he referred to Prof. R. E. Tunbridge's Heberden Oration, given earlier in the day, which had been concerned with the connective-tissue system. It seemed that we were all as old as our collagen. To the disturbing question "I feel a pain in your leg; comment on this," one candidate had answered "you are a pain in my neck." Somewhere beneath all that, Sir Russell suspected, was a philosophy for the Heberden Society. In his reply, Dr. Ernest Fletcher, the president, read a message of greeting from Dr. Philip Hench. The society now had 99 ordinary members (with a top list of 100), Dr. Fletcher reported; and there were 17 associate members (with a top list of 20). In recent weeks the society had lost two distinguished honorary members, Sir Lionel Whitby, who gave the Heberden Round in 1948, and Prof. D. Murray Lyon. Lord Cohen of Birkenhead proposed The Guests, among whom would have been Sir Henry Dale, F.R.S., had not an indisposition kept him at home. Lord Cohen spoke of Sir Henry's considerable achievements which had done so much to discount Voltaire's estimate of the physician as a pourer of drugs of which he knew little into bodies of which he knew less. To Lord Cohen's toast, the Very Rev. A. C. Don, Dean of Westminster, replied.

A digest of statistics of pneumoconiosis in the mining and quarrying industries in 1955 has been published by the Ministry of Fuel and Power (H.M. Stationery Office. Pp. 20. 3s.).

CORRIGENDUM: *Clinica Chimica Acta*.—The name of this journal was wrongly spelt in our note of Nov. 24 (p. 1113).

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The Terms and Conditions of Service of Hospital Medical and Dental Staff apply to all N.H.S. hospital posts we advertise, unless otherwise stated. Canvassing disqualifies, but candidates may normally visit the hospital by appointment.

Academic and Educational

ROYAL COLLEGE OF PHYSICIANS OF LONDON

ROBERT MERTTINS BIRD MACKENNA, Esq., M.D., F.R.C.P., will deliver the WATSON SMITH LECTURE on THURSDAY, 10TH JANUARY, 1957, at 5 P.M. at the College, Pall Mall East, S.W.1.

Subject : "Acne Vulgaris."

Any member of the Medical Profession admitted on presentation of card.

By order of the President.
HAROLD BOLDERO, Registrar.

UNIVERSITY OF LONDON
INSTITUTE OF ORTHOPÆDICS

COURSE IN DISORDERS OF BONE
28TH JANUARY–2ND FEBRUARY, 1957

Monday, 28th January—Town Section	
General affections of the adult skeleton	Mr. H. J. BURROWS
The kidney and bone disease	Dr. R. NASSIM
General properties of bone	Dr. H. A. SISSONS
Radiology of secondary deposits in bone	Dr. E. H. ALLEN
Tuesday, 29th January—Country Section	
Chemistry of bone	Dr. P. G. WALKER
Metabolic cases	Dr. R. NASSIM
Osteoporosis	Dr. F. H. STEVENSON
General clinical demonstration	Mr. J. I. P. JAMES
Wednesday, 30th January—Town Section	
Osteomyelitis	Mr. H. J. SEDDON
Rare bone infections	Mr. H. J. SEDDON
General clinical demonstration	Mr. D. TREVOR
Thursday, 31st January—Country Section	
Biochemical diagnosis of general bone diseases	Dr. P. G. WALKER
Response of bone and cartilage to infection	Dr. C. H. LACK
General clinical demonstration	Mr. P. H. NEWMAN
Friday, 1st February—Town Section	
Recent advances in the pathology of tumours of bone	Dr. H. A. SISSONS
Bone Tumours (Clinical)	Mr. K. I. NISSEN
Bone repair	Dr. H. A. SISSONS
Bone grafting	Mr. J. N. WILSON
Saturday, 2nd February—Town Section	
Congenital disorders of the skeleton	Mr. A. T. FRIPP
Reticuloses affecting bone	Dr. R. O. MURRAY

The fee for the course (including coffee, lunch and tea) is 7 guineas.

Early application should be made to the Dean, at 234, Great Portland-street, London, W.1.

INSTITUTE OF UROLOGY in association with St. Peter's, St. Paul's, and St. Philip's Hospitals. Full-time BIOCHEMIST (science degree or medical qualifications essential) required from 1st March, 1957, for work in connection with urological disease. Experience of routine biochemical tests and an interest in research necessary. Salary in accordance with University of London scales.

Applications, giving full details and enclosing copies of 2 recent testimonials, should be sent to the Secretary, Institute of Urology, 10, Henrietta-street, London, W.C.2. Closing date 31st January, 1957.

ST. GEORGE'S HOSPITAL MEDICAL SCHOOL, UNIVERSITY OF LONDON, Hyde Park-corner, London, S.W.1. Applications are invited for the post of LECTURER IN PATHOLOGY. The duties involve teaching, research, and diagnostic work in histo-pathology. The present salary scale is £1000–£1300 and there are prospects of promotion to a senior grade.

Applications should reach the Director of Pathology (from whom further particulars may be obtained) by 26th January, 1957.

UNIVERSITY OF ABERDEEN. Applications are invited for the post of LECTURER IN OBSTETRICS AND GYNÆCOLOGY, with clinical status in the Aberdeen Teaching Hospitals. Salary £1000, rising by £100 to £1500, with placing according to qualifications and experience. F.S.S.U. and children's allowance. Proportion of removal expenses refunded.

Conditions of appointment and forms of application should be obtained from the Secretary, The University, Aberdeen, with whom applications (15 copies) should be lodged not later than 11th January, 1957. Applicants outside the British Isles may submit 1 copy of application.

UNIVERSITY OF OXFORD, RADCLIFFE INFIRMARY, DEPARTMENT OF PATHOLOGY. Applications are invited for the post of GRADUATE ASSISTANT in the Department. The successful applicant will take part in the teaching and diagnostic work of the Department, but will be principally concerned with the development of visual instruction and the museum; there will be opportunities for original work. The commencing salary will be within a range from £700 to £1400 according to qualifications and experience, with family allowance and F.S.S.U. Duties to commence early in 1957.

Applications, together with the names of 3 referees, should be sent not later than 1st February, 1957, to Dr. A. H. T. ROBB-SMITH, Radcliffe Infirmary, from whom further particulars may be obtained.

UNIVERSITY OF DUBLIN. Trinity College. Applications are invited for the post of LECTURER IN BACTERIOLOGY (with medical qualifications), to begin duties on 1st March, 1957, or as soon as possible thereafter. The salary will be in the range of £750–£1050 p.a.

Further details may be obtained from the Registrar, Trinity College, Dublin, who will receive applications until 31st January, 1957.

THE LONDON HOSPITAL MEDICAL COLLEGE

COURSES IN ADVANCED SURGERY

An evening Postgraduate Course in Surgery for the Final Examination of the F.R.C.S. will be held at The London Hospital from 11TH MARCH to 29TH APRIL, 1957. The Course will be held on MONDAY and WEDNESDAY evenings from 6.30 P.M. to 8.30 P.M. with the exception of Monday, 22nd April, and will be limited to 18 students.

Applications should be made to the Dean, from whom further particulars can be obtained. The fee for External candidates will be 16 guineas and for "Old Londoners" 10 guineas.

H. B. MAY, M.D., F.R.C.P., The Dean.
The London Hospital Medical College, Turner-street, E.1.

Hospital Services : Senior Appointments

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD.

Amended Advertisement

ASSISTANT CHILD PSYCHIATRIST (Senior Hospital Medical Officer grade), 2 half-days a week (1 day), Hertfordshire Child Guidance Service. Candidates may visit by appointment with the Medical Director, Child Guidance Clinic, Hill End, St. Albans.

Applications before 25th January, 1957.

(2) CONSULTANT ANÆSTHETIST (8 half-days a week), Barnet Group of hospitals. Hospitals may be visited by appointment with Group Secretary, 1, Wellhouse-lane, Barnet, Herts.

Applications before 4th February, 1957.

(3) CONSULTANT PSYCHIATRIST (4 or 5 half-days a week—1 evening session essential), Portman Clinic, 8, Bourdon-street, Davis-street, W.1. Clinic is concerned with the diagnosis and treatment of adults and children, including delinquents and other social problem cases, and previous experience in these fields, together with research interests, will be an advantage. Preference will be given to candidates with analytic training. Clinic may be visited by direct appointment.

Applications before 6th February, 1957.

Application forms obtainable from, and returnable to, Secretary, North West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1.

OXFORD REGIONAL HOSPITAL BOARD. Consultant RADIOLOGIST (part-time) for 8 sessions a week to the Aylesbury/High Wycombe Area Department of Radiology. Duties mainly at High Wycombe War Memorial Hospital and Amersham General Hospital, and the successful candidate will be required to live in this area. Applicants must hold a recognised Diploma in Radiology.

Applications (12 copies), stating name, age, qualifications, and experience, should reach the Secretary, 43, Banbury-road, Oxford, not later than 26th January, 1957.

SHEFFIELD REGIONAL HOSPITAL BOARD. Part-time CONSULTANT GENERAL SURGEON for 3 notional half-days per week required for the Rotherham Hospital, Doncaster Gate, Rotherham.

Application forms and further details from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield. Forms to be returned by 19th January, 1957.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD requires a Whole-time CONSULTANT ORTHODONTIST. The duties of the appointment will include orthodontic work for the Portsmouth and adjoining areas and other districts as may be defined by the Board. Facilities and accommodation will be provided in the Royal Portsmouth Hospital and residence within a 10 mile radius of the Hospital will be a condition of the appointment. Candidates will be expected to have had considerable experience in orthodontics and possession of higher dental qualifications will be an advantage. Canvassing will disqualify but applicants may visit the Hospital by arrangement with the Group Secretary, Portsmouth Group Hospital Management Committee, St. Mary's Hospital, Milton-road, Portsmouth.

Applications (7 copies), stating age, qualifications, experience, and names and addresses of 3 referees, should be sent to the Area Secretary, "Highcroft," Romsey-road, Winchester, by 18th January, 1957.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD requires Whole-time or maximum Part-time CONSULTANT ORAL SURGEON to the Plastic and Oral Surgery Centre, Odstock Hospital, Salisbury. This is a dental appointment and a higher qualification in dental surgery is essential. Residence within a 10 mile radius of Salisbury is a condition of the appointment. Canvassing will disqualify, but applicants may visit the Hospital by arrangement with the Group Secretary, Salisbury Group Hospital Management Committee, Odstock Hospital, Salisbury.

Applications (7 copies), stating age, qualifications, experience, and names and addresses of 3 referees, should be sent to the Area Secretary, "Highcroft," Romsey-road, Winchester, by 18th January, 1957.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD requires Part-time RADIOLOGIST (Senior Hospital Medical Officer grade) for 4 half-days per week in the West Dorset Group of hospitals. The duties of the appointment will include regular visits to the Yeatman Hospital, Sherborne, and residence in the Dorchester area is a condition of the appointment. Canvassing will disqualify but applicants may visit the hospitals by arrangement with the Group Secretary, West Dorset Group Hospital Management Committee, Damers-road, Dorchester.

Applications (7 copies), stating age, qualifications, experience, and names and addresses of 3 referees, should be sent to the Area Secretary, "Highcroft," Romsey-road, Winchester, by 18th January, 1957.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the following appointments :—

CONSULTANT PHYSICIAN at Larkfield Hospital, Greenock. The appointment will be whole-time or on the maximum part-time basis of 9 notional half-days per week.

Whole-time ASSISTANT ORTHOPÆDIC AND CASUALTY SURGEON to the Orthopædic Department of the Royal Alexandra Infirmary, Paisley. Salary (at age 32 and over) on the scale £1575–£50–£2025.

These appointments are subject to the National Health Service (Scotland) superannuation regulations.

Applications (16 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, C.2, not later than 30 days after the publication of this advertisement.

DUBLIN. DR. STEEVENS' HOSPITAL. Dermatologist. Applications for this post are invited before 31st January, 1957. These should be sent to the undersigned who will supply information about the post on request.

WILLIAM KENNEDY, Secretary.

DUBLIN. DR. STEEVENS' HOSPITAL. Pathologist (part-time). Applications are invited for this post which would entail morning attendance at the Hospital laboratory 6 days a week. Minimum salary under the Health Act £800. Private practice allowed.

Further particulars supplied on request to the undersigned to whom applications should be sent before 31st January, 1957.

WILLIAM KENNEDY, Secretary.

Hospital Services : Junior Appointments

ANNIE McCALL MATERNITY HOSPITAL, Jeffreys-road, S.W.4. Applications are invited from registered Women medical practitioners for the post of RESIDENT OBSTETRIC HOUSE SURGEON (post recognised for the D.Obst.R.C.O.G.). Appointment is for a period of 6 months, vacant 1st February, 1957.

Applications, stating age, qualifications with dates, and nationality, accompanied by copies of 3 recent testimonials, to the Secretary not later than 12th January, 1957.

BROMPTON HOSPITAL, S.W.3. Applications invited for the post of NON-RESIDENT HOUSE PHYSICIAN for 6 months from 1st March, 1957. Duties include work in Out-patient Department and Wards. Experience in E.N.T. work desirable. Salary at the rate of £525 p.a.

Applications, stating age, qualifications with dates, nationality and appointments held, together with copies of testimonials, by 5th January, 1957, to—

KENNETH A. F. MILES, House Governor.

CENTRAL MIDDLESEX HOSPITAL, Park Royal, N.W.10. SENIOR HOUSE OFFICER in General Medicine required, with duties mainly in the Geriatric Department. Good facilities for higher examination and insight into working of general practice. Whole-time appointment for 6 months in first instance. Post vacant 1st February, 1957.

Applications, with 2 testimonials, to Medical Director by 5th January, 1957.

CENTRAL MIDDLESEX HOSPITAL, Park Royal, N.W.10. RESIDENT HOUSE OFFICER required in Paediatric Department. Post-registration appointment recognised for D.C.H. Appointment from 1st February, 1957.

Applications, with 2 testimonials, to Medical Director by 5th January, 1957.

DULWICH HOSPITAL (in association with King's College Hospital Medical School for teaching purposes), East Dulwich-grove, London, S.E.22. Applications invited for appointment as SENIOR HOUSE OFFICER (general medical duties), vacant from 1st March, 1957.

Apply, giving age and details of qualifications and experience, with copy testimonials or names of 2 referees, to Group Secretary, Camberwell Hospital Management Committee, Dulwich Hospital, not later than 14th January.

FULHAM HOSPITAL, St. Dunstan's-road, Hammersmith, W.6. FULHAM AND KENSINGTON HOSPITAL MANAGEMENT COMMITTEE. Qualified medical practitioners, including pre-registration candidates, are invited to apply for the following vacancies :—

HOUSE SURGEON (2 vacancies). Appointments recognised for F.R.C.S.

HOUSE PHYSICIAN (3 vacancies).

Appointments commence 1st February, 1957, are resident and are limited to 6 months.

Applications by 8th January, 1957, on forms obtainable from the Hospital Secretary. (L.156.)

HACKNEY HOSPITAL, London, E.9. (General—841 Beds.) Applications for the 6-months resident appointment of Pre-registration HOUSE SURGEON (vacant 16th January ; post recognised for F.R.C.S.) should reach the Secretary, above address, by 4th January, quoting HH/HS.

HACKNEY HOSPITAL, London, E.9. (General—841 Beds.) Applications for the 6-months resident appointment of Pre-registration HOUSE PHYSICIAN (vacant 17th January) should reach the Secretary, above address, by 4th January, quoting HH/HP.

HACKNEY HOSPITAL, London, E.9. (General—841 Beds.) Applications are invited for the following 6 months resident appointments :—

(*a*) Registered OBSTETRIC HOUSE SURGEON (from 17th April).

(*b*) Pre-registration OBSTETRIC HOUSE SURGEON (second post), from 1st February.

Posts recognised for M.R.C.O.G.

Applications to Secretary, above address, by 10th January, quoting HH/HSO.

HACKNEY HOSPITAL, London, E.9. (General—841 Beds.) Applications are invited for the 6 months resident appointment, from 1st February, of Pre-registration HOUSE SURGEON (second post) (recognised for F.R.C.S.) and should reach the Secretary, above address, by 10th January, quoting HH/HS.

HAMMERSMITH HOSPITAL AND INSTITUTE OF OBSTETRICS AND GYNÆCOLOGY, Ducane-road, London, W.12. HOUSE SURGEON (gynæcology) required 1st March. Post recognised for M.R.C.O.G.

Applications, stating age, qualifications, experience, names of 2 referees, to Secretary, Board of Governors, by 12th January.

LONDON CHEST HOSPITAL. Hospitals for Diseases OF THE CHEST. A vacancy occurs 1st March, 1957, for RESIDENT SURGICAL OFFICER. Appointment for 6 months, with prospect of renewal. Post graded as Senior House Officer or Registrar, according to qualifications and previous surgical experience.

Applications, stating date of birth, qualifications with dates, and previous appointments held, with copies of 3 testimonials, should reach the undersigned not later than 18th January.

THOMAS BROWN, House Governor.

London Chest Hospital, E.2.

MILDMAY MISSION HOSPITAL, Austin-street, London, E.2. Applications are invited for the pre-registration post of RESIDENT HOUSE SURGEON, vacant 1st February, 1957. Candidates should be in sympathy with the evangelical aims of the Hospital.

Applications and references to be addressed to the Medical Superintendent as soon as possible.

MILDMAY MISSION HOSPITAL, Austin-street, London, E.2. Applications are invited for the pre-registration post of RESIDENT HOUSE PHYSICIAN AND CASUALTY OFFICER, vacant 1st February, 1957. Candidates should be in sympathy with the evangelical aims of the Hospital.

Applications and references to be addressed to the Medical Superintendent as soon as possible.

MOTHERS' HOSPITAL (Salvation Army), Clapton, E.5. (Maternity—110 Beds.) Applications are invited for the 12 months resident appointment (vacant 1st February) of SENIOR HOUSE OFFICER (post recognised for M.R.C.O.G.) and should reach the Group Secretary, Hackney Hospital, London, E.9, by 10th January, quoting MH/SHO.

MOTHERS' HOSPITAL (Salvation Army), Clapton, E.5. (Maternity—110 Beds.) Applications are invited for the following 6 months resident posts :—

(*a*) Registered OBSTETRIC HOUSE SURGEONS (2 posts vacant 1st February and 1st March).

(*b*) Pre-registration (second post) OBSTETRIC HOUSE SURGEON (vacant 1st March).

Posts recognised for M.R.C.O.G.

Apply Group Secretary, Hackney Hospital, London, E.9, by 10th January, quoting MH (*a*) or (*b*).

NORTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD.

SURGICAL REGISTRAR (non-resident, near Hospital), Whipps Cross Hospital, Leytonstone, E.11. Recognised for F.R.C.S.

SURGICAL REGISTRAR (resident), Herts and Essex General Hospital, Bishop's Stortford, Herts. Recognised for F.R.C.S.

SURGICAL REGISTRAR (resident or non-resident, part-furnished flat available), Hertford County Hospital, Hertford. Recognised for F.R.C.S.

ANÆSTHETIC REGISTRAR (non-resident, sleeping in on duty nights), Chase Farm Hospital and other hospitals in the Enfield Group, Enfield, Middlesex. Post offers wide experience in anæsthesia and is recognised for D.A. and F.F.A.R.C.S.

ANÆSTHETIC REGISTRAR (resident), St. Margaret's Hospital, Epping, Essex. Recognised for F.F.A.R.C.S. and D.A.

ANÆSTHETIC REGISTRAR (resident), Herts and Essex General Hospital, Bishop's Stortford, Herts.

PÆDIATRIC REGISTRAR (non-resident), Queen Elizabeth Hospital for Children and The Mothers' Hospital (Salvation Army), Hackney. Vacant 1st March. Experience in diseases of children essential.

Appointments subject to review after 1 year.

Application forms from Secretary, 11A, Portland-place, W.1, to be returned by 12th January, 1957.

QUEEN CHARLOTTE'S AND CHELSEA HOSPITALS. Applications are invited from candidates having the M.R.C.O.G. for the post of SENIOR REGISTRAR on the basis of 8 notional half-day sessions per week in the first instance for duties at both hospitals.

Applications, stating age, qualifications with dates, together with the names of 3 referees, to the House Governor, 339, Goldhawk-road, London, W.6, not later than 12th January, 1956.

QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford, E.15. Applications are invited for the appointment of CLINICAL ASSISTANT (Skin Department), for 1 session a week on Tuesday mornings. Remuneration £175 p.a.

Applications, together with the names of 2 referees, to Group Secretary, West Ham Group Hospital Management Committee, Stratford, E.15, by 4th January, 1957.

QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford, E.15. HOUSE PHYSICIAN (pre-registration) required for 6 months commencing 13th February, 1957.

Applications, with copies of recent testimonials, to Hospital Secretary by 12th January, 1957.

ROYAL MARSDEN HOSPITAL, Fulham-road, S.W.3. ASSISTANT MEDICAL OFFICER in the Department of Physical Medicine in the grade of Part-time Medical Officer. 1 session a week.

Apply on a form to be obtained from the House Governor not later than 9th January, 1957.

ROYAL MARSDEN HOSPITAL, Fulham-road, S.W.3. Applications are invited for a full-time appointment of REGISTRAR in the Radiotherapy Department from March, 1957. Salary £850 p.a. Candidates not holding a Diploma in Medical Radiology will be considered, especially if they have a higher qualification in medicine or surgery.

Forms of application are obtainable from the House Governor, to whom applications, together with the names of 3 referees, should be sent by 9th January, 1957.

SOUTH EAST REGIONAL THORACIC SURGERY UNIT. (50 Beds.) BROOK GENERAL HOSPITAL, Shooters Hill-road, S.E.18. SENIOR HOUSE OFFICER, vacant mid-January. Recognised for F.R.C.S. 6 months appointment and may then be renewed for a further period. The Unit treats all types of chest diseases and offers opportunity for comprehensive training in thoracic surgery.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

ST. MARYLEBONE HOSPITAL FOR PSYCHIATRY AND CHILD GUIDANCE, 48, Cosway-street, N.W.1. Applications are invited for the post of REGISTRAR in the Child Guidance Department for 1 session a week. Applicants should have had previous experience in child guidance.

Application forms obtainable from, and returnable to, Secretary to Committee, Paddington Group Hospital Management Committee, Harrow-road, W.9, by 16th January, 1957.

ST. MARY'S HOSPITAL, W.2. Applications are invited for the post of Whole-time SENIOR REGISTRAR to the Diagnostic Radiological Department of St. Mary's Hospital. The appointment is for a first period of 12 months, with effect from 11th March, 1957 ; remuneration to be at Senior Registrar rates.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, details and National Health Service gradings of previous and present appointments, together with the names and addresses of 3 referees, should reach ALAN POWDITCH, House Governor, not later than 15th January, 1957.

ST. MARY'S HOSPITAL, W.2. Applications are invited for the post of REGISTRAR to the Diagnostic Radiological Department : possession of the Diploma in Radiology is essential. The appointment is for a first period of 12 months, with effect from 11th March, 1957 ; remuneration to be at Registrar rates.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, details and National Health Service gradings of previous and present appointments, together with the names and addresses of 3 referees, should reach ALAN POWDITCH, House Governor, not later than 15th January, 1957.

ST. MARY'S HOSPITAL, W.2. Applications are invited from registered practitioners for the post of HOUSE OFFICER to the Almroth Wright Wards ; graded Senior House Officer. The appointment is for a period of 8 months, with effect from 1st February, 1957.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, details and National Health Service gradings of previous and present appointments, together with the names and addresses of 3 referees, should reach ALAN POWDITCH, House Governor, by 8th January, 1957.

ST. MATTHEW'S HOSPITAL. (320 geriatric beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (geriatrics), resident.

Applications and copies of 2 testimonials to the Hospital Secretary, St. Matthew's Hospital, Shepherdess-walk, London, N.1, by 19th January, 1957.

ST. NICHOLAS HOSPITAL, Plumstead, S.E.18. Senior HOUSE OFFICER (Casualty, Orthopædic, and Fracture Departments), vacant now. Recognised for F.R.C.S. 6 months appointment and may then be renewed. Salary £745 p.a., less £150 p.a. for residence.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

ST. STEPHEN'S HOSPITAL, Chelsea, S.W.10. Obstetric AND GYNÆCOLOGICAL HOUSE SURGEON (resident), post-registration. Post recognised for D.Obst.R.C.O.G. Vacancy mid-February.

Applications, naming 2 referees, to Medical Superintendent.

ASHFORD HOSPITAL, Ashford, Middlesex. Staines GROUP HOSPITAL MANAGEMENT COMMITTEE. CLINICAL ASSISTANT for Ophthalmic Unit required for 2 notional half-days per week, at present Monday A.M. and Wednesday P.M. Salary £175 p.a. per half-day session.

Applications, stating age, qualifications and experience, with copies of 3 recent testimonials, to Medical Director of Hospital immediately.

ASHFORD HOSPITAL, Ashford, Middlesex. (560 Beds.) STAINES GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, RESIDENT HOUSE OFFICER (Male) for general surgical and medical duties. 6 months appointment, not suitable for pre-registration candidates.

Applications, stating age, qualifications and experience, with copies of up to 3 recent testimonials, to Medical Director of Hospital immediately.

AYLESBURY, BUCKINGHAMSHIRE. STOKE MANDEVILLE HOSPITAL. (619 Beds.) SENIOR HOUSE PHYSICIAN (Senior Resident Medical Officer) for the Acute General Medicine Unit comprising 2 Registrars and 3 Resident House Physicians. Senior House Officer grade ; vacant 14th January, 1957.

Applications, with copies of 3 recent testimonials, to the Administrative Officer.

AYLESBURY, BUCKINGHAMSHIRE. ROYAL BUCKINGHAMSHIRE HOSPITAL. HOUSE OFFICER in Accident and Orthopædic Surgery and Children's Surgery. Recognised for F.R.C.S. Pre-registration post but registered practitioners invited to apply.

Apply, with 2 recent testimonials, to Secretary-Superintendent.

AYLESBURY, BUCKINGHAMSHIRE. ROYAL BUCKINGHAMSHIRE HOSPITAL. SENIOR HOUSE OFFICER in Accident and Orthopædic Surgery and Children's Surgery. Recognised for F.R.C.S.

Apply, with 2 recent testimonials, to Secretary-Superintendent.

AYLESBURY, BUCKINGHAMSHIRE. ROYAL BUCKINGHAMSHIRE HOSPITAL. HOUSE OFFICER (ophthalmology). Post recognised for D.O.

Apply, with 2 names for reference, to Secretary-Superintendent.

BARNSTAPLE. NORTH DEVON INFIRMARY. (105 Beds.) HOUSE SURGEON (pre-registration). Post vacant early January.

Applications to Group Secretary, North Devon Hospital Management Committee, 19, Alexandra-road, Barnstaple.

BEBINGTON, CHESHIRE. CLATTERBRIDGE HOSPITAL. (819 Beds.) CENTRAL WIRRAL GROUP. HOUSE OFFICERS for pre-registration posts. 6 months commencing 1st March, 1957. General surgery—4 posts. Salary according to previous posts held.

Application forms, obtainable from Hospital Secretary, to be returned as soon as possible.

BEDFORD (near). BROMHAM HOSPITAL. (434 Beds for mental defectives and 60 at Annexe near Sandy.) REGISTRAR in Psychiatry required (resident). Hospital may be visited by direct appointment with the Medical Superintendent (phone : Oakley 295).

Application forms obtainable from, and returnable to, Secretary, Bedford Group Hospital Management Committee, 3, Kimbolton-road, Bedford.

BEDFORD GENERAL HOSPITAL. (439 Beds.) House SURGEON required. Pre- or post-registration. Recognised for F.R.C.S. Post offers exceptional opportunities for general experience in busy acute Surgical Units.

Inquiries and applications, with copies of 2 recent testimonials, to Group Secretary, 3, Kimbolton-road, Bedford.

BEVERLEY, YORKSHIRE. WESTWOOD HOSPITAL. (229 Beds.) HOUSE PHYSICIAN. House Officer or Senior House Officer grading according to experience. Pre-registration post, but fully qualified practitioners may apply.

Apply Group Secretary.

BIDEFORD AND DISTRICT HOSPITAL. (51 Beds.) Applications invited for post of HOUSE OFFICER, now vacant. Flat available for married officer.

Applications, stating names of 2 referees, to Group Secretary, North Devon Hospital Management Committee, 19, Alexandra-road, Barnstaple.

BIRMINGHAM GROUP 9 HOSPITAL MANAGEMENT COMMITTEE. Whole-time JUNIOR HOSPITAL MEDICAL OFFICER for mental deficiency group of 1358 Beds. Scope for training in modern treatment methods. Recognised for D.P.M. Resident (single accommodation only) or non-resident.

Applications, with names and addresses of 2 referees, to Secretary, Coleshill Hall Hospital, Coleshill, Birmingham, as soon as possible.

BIRMINGHAM. MONYHULL HALL HOSPITAL, Kings HEATH, BIRMINGHAM, 14. BIRMINGHAM (NO. 8) HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of a JUNIOR HOSPITAL MEDICAL OFFICER (resident or non-resident). This mental deficiency hospital offers good experience in all branches of the investigation and training of mental defectives. In addition there are opportunities to gain experience with E.S.N. children and in child psychiatry at St. Francis Residential Special School, which is associated with the Hospital. There is a large, well-developed Psychological Department staffed by 3 Clinical Psychologists. The Hospital is recognised for the first-year of the training for the D.P.M. Accommodation for a single person is available.

Applications, giving full personal particulars, qualifications and experience, together with the names and addresses of 2 referees, to be sent to the Medical Superintendent at the above Hospital within 2 weeks of the appearance of this advertisement.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. THE CHILDREN'S HOSPITAL, Ladywood-road, BIRMINGHAM, 16. SENIOR HOUSE OFFICER (casualty) required to commence duty on 21st March, 1957. Previous surgical experience essential.

Forms of application may be obtained from the House Governor and should be returned to him by 12th January, 1957. G. A. PHALP, Secretary to the Board of Governors.

BISHOP AUCKLAND, co. DURHAM. THE GENERAL HOSPITAL. (350 Beds.) HOUSE PHYSICIAN required. Fully registered practitioner or pre-registration candidate.

Apply, naming 2 referees, to K. G. T. LUXFORD, Group Secretary, South West Durham Hospital Management Committee, at the above address.

BISHOP'S STORTFORD, HERTFORDSHIRE. HERTS AND ESSEX GENERAL HOSPITAL. (400 Beds.) Locum REGISTRAR (anæsthetics), resident, required mid-January. Appointment for 1 month and thereafter on week by week basis.

Applications, stating qualifications, nationality, age, and experience, with copies of testimonials, or the names of 2 referees, to the Hospital Secretary (Telephone : Bishop's Stortford 963).

BLACKBURN. ROYAL INFIRMARY. (262 acute beds.) HOUSE SURGEON required for 23rd January, 1957. Post recognised for F.R.C.S. and approved for pre-registration purposes.

Applications to Secretary, Hospital Management Committee Office, Royal Infirmary, Blackburn.

BLACKBURN. ROYAL INFIRMARY. (262 acute beds.) HOUSE PHYSICIAN required for 23rd January, 1957. Post recognised for pre-registration purposes.

Apply to Secretary, Hospital Management Committee Office, Royal Infirmary, Blackburn.

BLACKBURN. ROYAL INFIRMARY. (262 general beds.) BLACKBURN AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. JUNIOR HOSPITAL MEDICAL OFFICER or SENIOR HOUSE OFFICER (casualty and orthopædics) required immediately. Post is recognised for F.R.C.S. Junior Hospital Medical Officer post can be for any period up to 4 years and a starting salary above the minimum of the scale may be approved on account of special experience or qualifications.

Apply to Secretary, Hospital Management Committee Office, Royal Infirmary, Blackburn, Lancs.

BLACKBURN AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. REGISTRAR (medicine) required beginning of February, 1957. Resident post. Duties at Royal Infirmary, Blackburn (262 acute beds) as arranged by Consultant Physician.

Application forms from Secretary, Hospital Management Committee Office, Royal Infirmary, Blackburn.

BLACKBURN AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE.

Queen's Park Hospital, Blackburn (640 general beds) HOUSE PHYSICIAN required on 30th January, 1957. Post recognised for pre-registration purposes.

Royal Infirmary, Blackburn

HOUSE SURGEON required on 1st February, 1957. Post recognised for F.R.C.S., and approved for pre-registration purposes.

Apply to Group Secretary, Hospital Management Committee Office, Royal Infirmary, Blackburn.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL, Shelley-road. BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of GENERAL HOUSE SURGEON, which becomes vacant immediately. Favourable consideration will be given to suitable applicants for subsequent House Physician appointments. The appointment is recognised for the F.R.C.S. examination and for pre-registration purposes.

Applications to the Hospital Secretary.

BRADFORD, 1. ROYAL EYE AND EAR HOSPITAL. JUNIOR HOUSE SURGEON (ophthalmology), vacant 7th February, 1957. Recognised for D.O.M.S. and F.R.C.S.

Applications, stating age, nationality, qualifications, and experience, with copy testimonials, to Secretary, Bradford Royal Infirmary.

BRIGHTON. ROYAL SUSSEX COUNTY HOSPITAL. (312 Beds.) 2 CASUALTY HOUSE SURGEONS. Duties include work in Orthopaedic and Traumatic Unit. Vacant mid-January and February. Recognised for pre-registration and F.R.C.S.

Applications, stating usual particulars, and naming 2 referees, to the Administrative Officer, Royal Sussex County Hospital, Brighton.

BRISTOL AND COSSHAM/FRENCHAY HOSPITAL MANAGEMENT COMMITTEE. 2 SENIOR HOUSE OFFICERS required in the Thoracic Surgery Department, which is the Regional Thoracic Surgery Centre (120 Beds) for the South West.

Applications, with full particulars, should be addressed to the Group Secretary, Frenchay Hospital, Bristol, quoting "Thoracic."

BRISTOL. COSSHAM/FRENCHAY HOSPITAL MANAGEMENT COMMITTEE. FRENCHAY HOSPITAL. (542 staffed beds—expanding.) Vacancy shortly occurs for the post of SENIOR HOUSE OFFICER (Regional Department of Neurosurgery), tenable for 6–12 months. The post offers useful surgical experience and the opportunity of gaining a working knowledge of neurological diagnosis. Recognised for F.R.C.S.

Applications to the Secretary, Frenchay Hospital, quoting "N.S.F." Names of 2 referees required.

BROMSGROVE GENERAL HOSPITAL, Worcestershire. (423 Beds.) Applications are invited for the pre-registration post of HOUSE SURGEON at the above Hospital. Post vacant early February.

Applications, with the names of 3 referees, to the Hospital Secretary.

BURTON GENERAL HOSPITAL. (250 Beds.) Junior HOSPITAL MEDICAL OFFICER ANÆSTHETIST (resident or non-resident) required at the above Hospital. Recognised for D.A.

Applications to Group Secretary, General Hospital, Burton upon Trent, as soon as possible.

CAMBRIDGE. ADDENBROOKE'S HOSPITAL. House SURGEON for 6 months from 14th February. Recognised Pre-registration Service.

Apply, stating age, nationality, qualifications, and experience with dates, and copies of 3 testimonials, to Secretary by 12th January. Interviews 23rd January.

CANTERBURY. KENT AND CANTERBURY HOSPITAL. (277 Beds.) GYNÆCOLOGICAL HOUSE SURGEON required at Highland Court Annexe, a unit of 25 gynæcological beds situated 3 miles from the above Hospital, with all ancillary services available. Recognised for M.R.C.O.G. 6 months appointment. Post now vacant. National Health Service salary and conditions.

Applications, together with copies of 2 recent testimonials, to be addressed to the Hospital Secretary at the above Hospital.

CARSHALTON, SURREY. ST. HELIER HOSPITAL. 2 HOUSE PHYSICIANS (approved for Pre-registration service), vacant 27th January and 1st February respectively.

Applications, stating age, experience and qualifications, with copies of recent testimonials and the names of 2 referees, should be sent to the Secretary at above address.

CARDIFF. ST. DAVID'S HOSPITAL. Senior House OFFICER in Obstetrics required at above Hospital. Appointment recognised for M.R.C.O.G.

Further particulars and form of application from Group Secretary, Cardiff Hospital Management Committee, 44, Cathedral-road, Cardiff.

CARDIFF. THE UNITED CARDIFF HOSPITALS. Applications are invited for the post of SENIOR HOUSE OFFICER in General Medicine at Llandough Hospital, Penarth. Appointment to commence February, 1957.

Application forms are available from the Secretary to the Board at Cardiff Royal Infirmary, Newport-road, Cardiff, and should be returned within 14 days of the appearance of this advertisement.

CARLUKE, LANARKSHIRE. LAW HOSPITAL. Applications are invited for the following resident posts (pre- or post-registration) for the 6 months commencing 1st February, 1957.

MEDICAL HOUSE OFFICER.

ORTHOPÆDIC HOUSE OFFICER.

GYNÆCOLOGICAL HOUSE OFFICER (post recognised for M.R.C.O.G.).

JUNIOR HOSPITAL MEDICAL OFFICER (tuberculosis).

Preference will be given to Female candidates.

Applications, stating age, qualifications and any previous experience, together with the names of 2 referees, should be submitted as soon as possible to the Group Medical Superintendent, Law Hospital.

CHERTSEY, SURREY. ST. PETER'S HOSPITAL (late Botley's Park War Hospital). (430 Beds.) RESIDENT HOUSE SURGEON (Senior House Officer or Intern) required for the Gynæcological (30 Beds) and E.N.T. (16 Beds) Departments. Duties to commence on 15th February, 1957. Salary in accordance with terms and conditions of National Health Service.

Applications, together with names and addresses of referees, to be sent to the Physician-Superintendent, St. Peter's Hospital, as soon as possible.

CHESTER. BARROWMORE HOSPITAL, Great Barrow, CHESTER. Male SENIOR HOUSE OFFICER (medical) required. Salary £745 p.a., less £150 for residence. The hospital is modern in all respects and contains Regional Thoracic Surgical Unit. Applications from ex-patients considered.

Any further information may be obtained from, and applications, stating names of 2 referees, to Physician-Superintendent.

CHICHESTER. ST. RICHARD'S HOSPITAL. (400 Beds.) CHICHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, 2 HOUSE SURGEONS for general surgery (pre-registration) for 6 months only in the first instance. Posts vacant 1st January, 1957. Posts recognised for F.R.C.S.

Applications, stating age, qualifications and experience, giving names of 2 persons from whom reference may be obtained, should be sent to the Surgeon-Superintendent.

COLCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for :—

Essex County Hospital, Colchester (185 Beds)

HOUSE OFFICER (surgical). First, second, third or pre-registration post, tenable for 6 months. Recognised for F.R.C.S.

Black Notley Hospital, Braintree (516 Beds)

Posts of HOUSE SURGEON and HOUSE PHYSICIAN. The successful applicant will serve 6 months as House Surgeon followed by 6 months as House Physician. First, second, third or pre-registration posts. Surgical post includes duties in general surgical and gynæcological wards. Recognised for F.R.C.S. Medical post includes duties in medical and pædiatric wards.

Applications, with copies of 3 testimonials, to Group Secretary, 14, Pope's-lane, Colchester.

COTTINGHAM (near HULL). CASTLE HILL HOSPITAL. HULL B HOSPITAL MANAGEMENT COMMITTEE. JUNIOR HOSPITAL MEDICAL OFFICER (resident) to work in Major Thoracic Surgery Unit. Accommodation available for single person only at present. The Unit has 50 Beds for all types of thoracic surgery, including tuberculosis and non-tuberculosis, œsophageal and cardiac.

Application forms from Group Secretary, De la Pole Hospital, Willerby, East Yorkshire.

CROYDON GENERAL HOSPITAL. Casualty Officer (Senior House Officer resident). Post vacant 22nd January, 1957, and is recognised for Final F.R.C.S. examination. There is a Registrar in charge of department.

Application forms obtainable from GEORGE A. PAINES, Secretary, Hospital Management Committee, General Hospital, Croydon.

DARLINGTON MEMORIAL HOSPITAL. (208 Beds.) Applications are invited for the post of RESIDENT HOUSE SURGEON (approved pre-registration appointment) which post is recognised for the F.R.C.S. (Eng.). Salary in accordance with national scale.

Apply, giving age and references, to the undersigned forthwith. G. W. BECKWITH, Group Secretary.

DONCASTER. WESTERN HOSPITAL. (Recognised under the regulations for the D.Obst.R.C.O.G. and M.R.C.O.G. (obstetrical experience) and approved for Pre-registration Service under the Medical Act, 1950.) Applications are invited for the post of OBSTETRICAL HOUSE OFFICER (Senior House Officer or pre-registration post), vacant end of January.

Applications should be forwarded to the Group Secretary, Doncaster Hospital Management Committee, at Doncaster Royal Infirmary, by 10th January.

DURHAM HOSPITAL MANAGEMENT COMMITTEE.

Dryburn Hospital, Durham (303 Beds)

HOUSE PHYSICIAN for Pædiatric unit of 42 Beds. Approved pre-registration appointment and recognised for D.C.H.

HOUSE SURGEON. Approved pre-registration post and recognised under the F.R.C.S. regulations.

General Hospital, Chester-le-Street (204 Beds)

HOUSE PHYSICIAN (general medicine). Approved pre-registration post.

SENIOR HOUSE OFFICER (general surgery).

HOUSE SURGEON. Approved pre-registration post.

All the above posts vacant 1st February, 1957.

Apply, with names and addresses of 2 referees, to Group Secretary, Dryburn Hospital, Durham.

DORCHESTER. DORSET COUNTY HOSPITAL. West DORSET GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. MEDICAL REGISTRAR required (Registrar grade) at above Hospital. Salary according to experience (£850 or £965 p.a.), with deduction of £170 p.a. if resident.

Application form, which should be returned, duly completed, by 12th January, 1957, from Group Secretary, West Dorset Hospital Management Committee, Damers-road, Dorchester, Dorset.

DRIFFIELD, YORKSHIRE. NORTHFIELD SANATORIUM. (78 Beds.) SENIOR HOUSE PHYSICIAN, vacant now. Offers experience all branches of tuberculosis within the Group, including surgery, M.M.R., and clinics. Time for study. Ex-patients welcome. £150 for full residence.

Applications to Group Secretary, Westwood Hospital, Beverley, Yorkshire.

DRIFFIELD, YORKSHIRE. EAST RIDING GENERAL HOSPITAL. (247 Beds.) HOUSE PHYSICIAN, vacant early January. Approved pre-registration post. Fully qualified practitioners may apply. Duties include acute and chronic medicine. Good general experience for first house appointment.

Apply Group Secretary, Westwood Hospital, Beverley, Yorkshire.

DUDLEY, STOURBRIDGE AND DISTRICT HOSPITAL GROUP, BIRMINGHAM REGION.

The Guest Hospital, Dudley (154 Beds)

SENIOR HOUSE OFFICER (surgical). Post now vacant.
SENIOR HOUSE OFFICER (casualty). Post vacant 1st January, 1957.
HOUSE OFFICER (surgical), pre-registration. Post vacant January, 1957.

Apply, Group Secretary, Guest Hospital, Dudley.

EAST ANGLIAN REGIONAL HOSPITAL BOARD. REGISTRAR in Obstetrics and Gynæcology at hospitals in the East Suffolk and Ipswich Area. Main hospital Ipswich and East Suffolk (Heath Road Wing)—48 obstetric and 33 gynæcology beds. Post provides wide experience and recognised for M.R.C.O.G. Single accommodation available. Appointment for 1 year, renewable for second year.

Applications, stating age, experience and the names of 3 referees, to Board's Senior Administrative Medical Officer, 117, Chesterton-road, Cambridge, by 7th January, 1957. Candidates invited to visit the Hospital by direct arrangement with Hospital Management Committee Secretary, Ipswich and East Suffolk Hospital (Anglesea Road Wing).

EDINBURGH. ROYAL EDINBURGH HOSPITAL FOR MENTAL AND NERVOUS DISORDERS BOARD OF MANAGEMENT. Applications are invited for the appointment of SENIOR HOUSE OFFICER to work in the Professorial Unit of the Jordanburn Nerve Hospital which is attached to the University Department of Psychological Medicine. This post also includes outpatient and inpatient work at the Royal Infirmary, Edinburgh. Accommodation may be available.

Applications, giving details of experience and the names of 2 referees, should be made within 2 weeks of the appearance of this advertisement to the Group Secretary and Treasurer, 40, Colinton-road, Edinburgh, 10.

EDINBURGH NORTHERN GROUP OF HOSPITALS. JUNIOR HOSPITAL MEDICAL OFFICER in Anæsthetics required, and in the first instance the appointment will be to the Western General Hospital. Hospital recognised for F.F.A.R.C.S. and D.A.

Applications, with names of 2 referees, to the Medical Superintendent, Western General Hospital, Edinburgh, 4.

EPSOM DISTRICT HOSPITAL, Dorking-road, Epsom. RESIDENT HOUSE SURGEON required 19th January for Orthopædic, E.N.T. and Eye Departments. Pre-registration post.

Applications, stating age, qualifications, and experience, with copies of 2 recent testimonials, should be sent immediately to Group Secretary at above address.

EXETER. DIGBY-WONFORD HOSPITAL. (605 (mental) Beds.) JUNIOR HOSPITAL MEDICAL OFFICER required. Previous psychiatric experience advisable, but not essential if candidate has good general experience. Facilities for study for D.P.M. Salary scale £775–£50–£1075. Residential accommodation will be made available at Digby Hospital. Whitley Council terms and conditions of service.

Applications, giving age, nationality, qualifications, and experience, with names of 2 referees, to Group Secretary, Devon Mental Hospital Management Committee, Exminster Hospital, near Exeter, as soon as possible.

GREAT YARMOUTH AND GORLESTON GENERAL HOSPITAL, DENE SIDE, GREAT YARMOUTH. HOUSE SURGEONS (2), Male or Female, required immediately. These are pre-registration posts, salary £425, £475 or £525 p.a. according to experience, less deduction for board-residence. Membership of a Medical Defence Society is a condition of appointment.

Applications, stating age, qualifications and experience with names of 2 referees, to Hospital Secretary.

HASLEMERE AND DISTRICT HOSPITAL, Haslemere, SURREY. Locum Tenens SURGICAL REGISTRAR (general) required 14th–20th January, 1957, inclusive.

Applications to Hospital Secretary.

HEMEL HEMPSTEAD, HERTFORDSHIRE. WEST HERTS HOSPITAL. HOUSE SURGEON (pre-registration) required.

Applications, giving full details and 2 names for reference, should be sent to the Hospital Secretary as soon as possible.

HULL. KINGSTON GENERAL HOSPITAL. (419 Beds.) HULL A GROUP HOSPITAL MANAGEMENT COMMITTEE. HOUSE PHYSICIAN (pre-registration post), resident, and tenable for 6 months. Vacant early February.

Applications, with 2 recent testimonials, to the Hospital Secretary.

HULL. KINGSTON GENERAL HOSPITAL. (419 Beds.) HULL A GROUP HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON (pre-registration post), resident, and tenable for 6 months. This post includes gynæcology, E.N.T., and general surgery. Vacant early February.

Applications, with 2 recent testimonials, to the Hospital Secretary.

HORNCHURCH. ST. GEORGE'S HOSPITAL. Junior HOSPITAL MEDICAL OFFICER (resident) required from 1st January, 1957, at this Hospital which accommodates 404 chronic sick patients. The post offers excellent geriatric experience.

Applications should be forwarded to the Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford, as soon as possible.

HUDDERSFIELD ROYAL INFIRMARY. (312 Beds.) HUDDERSFIELD HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON required to commence duties on 23rd January, 1957. The post is recognised as a pre-registration appointment and for the F.R.C.S. Salary in accordance with national scale.

Applications, together with copies of 3 recent testimonials, to be addressed to the undersigned as soon as possible.

H. J. JOHNSON, Secretary to the Management Committee.

The Royal Infirmary, Huddersfield.

ILKLEY. MIDDLETON HOSPITAL. (430 Beds.) Resident SENIOR HOUSE OFFICER (surgical) required for major Thoracic Surgical Unit at the above Hospital.

Applications, stating age, nationality, qualifications, and experience, to Hospital Secretary.

IPSWICH AND EAST SUFFOLK HOSPITAL. Anglesea ROAD WING. Locum Tenens CASUALTY OFFICER (Senior House Officer grade) required from 21st January to 9th February, 1957.

Applications, with full particulars, to Hospital Secretary.

IPSWICH AND EAST SUFFOLK HOSPITAL. Anglesea ROAD WING. (356 Beds.) Applications are invited for the post of HOUSE SURGEON to the E.N.T. and Ophthalmic Departments, vacant immediately. The post is recognised for pre-registration and for the D.L.O. examination.

Applications, giving full particulars and copies of recent testimonials, to Hospital Secretary.

IPSWICH AND EAST SUFFOLK HOSPITAL. Anglesea ROAD WING. (356 Beds.) Applications are invited for the post of HOUSE SURGEON to Consultant General Surgeon. The post, which is vacant in early January, is recognised for pre-registration and for the F.R.C.S. examinations.

Applications, with copies of recent testimonials, to Hospital Secretary.

IPSWICH AND EAST SUFFOLK HOSPITAL. Heath ROAD WING, IPSWICH. (274 Beds.) Applications invited for the post of HOUSE SURGEON (pre-registration) to General Surgeons. The post, vacant shortly, is recognised for the R.C.S. examinations.

Applications, with full details and copies of recent testimonials, to the Hospital Secretary.

ISLEWORTH. WEST MIDDLESEX HOSPITAL. North WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR (Geriatric Unit), whole-time, non-resident, vacant January. The Unit is an integral part of Hospital. Offers excellent clinical experience in diseases of the elderly (acute and long term, domiciliary visiting and outpatient clinics). Successful candidate will work under direction of whole-time Consultant Physician, and Hospital has facilities for full investigations.

Application forms obtainable from, and returnable to, Group Secretary, South West Middlesex Hospital Management Committee, West Middlesex Hospital, Isleworth, by 8th January, 1957.

LEAMINGTON SPA. WARNEFORD GENERAL HOSPITAL. (197 Beds.) RESIDENT HOUSE SURGEON (general surgery). Post vacant 8th January, 1957. Recognised for pre-registration and F.R.C.S. Post provides excellent experience. Good accommodation available.

Applications, with 2 recent testimonials, to Hospital Secretary.

LEEDS REGIONAL HOSPITAL BOARD. Senior REGISTRAR vacancies.

Anæsthetics

Bradford A and B Groups. Preferably resident, if accommodation available at the time of the appointment.

Child Psychiatry

Person appointed will be under training at the Leeds University Department of Psychiatry and Associated Clinics, and will have experience at the Local Authority Child Guidance Department and at a Special School for Maladjusted Boys.

Radiology

General Infirmary at Leeds (7 notional half-days per week) and the County Hospital, York (4 notional half-days per week).

Applications, stating age, qualifications, details of present and previous appointments with dates, together with the names and addresses of 3 referees, to the Secretary, Joint Registrars Committee, Park-parade, Harrogate, by 18th January, 1957.

LEEDS. THE UNITED LEEDS HOSPITALS. The GENERAL INFIRMARY AT LEEDS. PÆDIATRIC REGISTRAR required from 1st March, 1957. Duties concerned mainly with ward, outpatient and casualty work at the General Infirmary at Leeds and occasional duties with premature and ailing infants at the Maternity Hospital at Leeds. The post is associated with the University Department of Pædiatrics and Child Health.

Applications, giving age, full details of qualifications and previous posts with dates, together with 3 names for reference, to be sent to the Sub-Dean, School of Medicine, Leeds, 2, not later than 7th January, 1957.

LIVERPOOL, 20. BOOTLE HOSPITAL. Applications are invited for a post as HOUSE SURGEON. The post will be vacant from 1st January, 1957, and is recognised for Pre-registration Service.

Apply to Secretary, Walton Hospital, Liverpool, 9.

LIVERPOOL AND DISTRICT EASTERN HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from medical practitioners for the following appointments falling vacant on 1st March, 1957.

Broadgreen Hospital, Liverpool, 14

ADMISSION ROOM AND CASUALTY OFFICER (non-resident), House Officer or Senior House Officer status according to experience, tenable for 6 months. Recognised for F.R.C.S.

2 HOUSE SURGEONS (obstetrics and gynæcology), preference given to registered medical practitioners.

HOUSE PHYSICIAN (pre-registration).

Mill Road Maternity Hospital, Liverpool, 6

CASUALTY OFFICER (non-resident), outpatient clinics. Junior Hospital Medical Officer status.

2 HOUSE SURGEONS (obstetrics and gynæcology), preference given to registered medical practitioners.

Applications, on forms obtainable from the undersigned, to be returned completed not later than 4th January, 1957.

H. BLYTHE, Group Secretary.

Broadgreen Hospital, Liverpool, 14.

LINCOLN COUNTY HOSPITAL. (200 Beds.) Applications are invited for the pre-registration post of HOUSE SURGEON. The post is tenable for a period of 6 months from 1st February, 1957, and can be followed by a pre-registration post of House Physician if desired.

Applications, giving full particulars, should be addressed to—

R. W. HOWICK, Group Secretary.

LINCOLN COUNTY HOSPITAL. (200 Beds.) Applications are invited for the pre-registration post of HOUSE PHYSICIAN. The post is tenable for a period of 6 months from 1st February, 1957, and can be followed by a pre-registration post of House Surgeon if desired.

Applications, giving full particulars, should be addressed to—

R. W. HOWICK, Group Secretary.

LOUTH, LINCOLNSHIRE. COUNTY HOSPITAL. (215 Beds.) GRIMSBY HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the pre-registration post of HOUSE OFFICER (surgical), which fa is vacant 5th January next.

Applications, giving full details, together with the names of 2 referees, should be addressed to the Hospital Secretary.

MIDDLESBROUGH. ST. LUKE'S HOSPITAL. St. Luke's HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER (resident). Salary scale £775–£50–£1075 p.a. Flat (furnished or unfurnished) available. The post in the first instance will be tenable for a period of 4 years and is renewable. Facilities for all forms of psychiatric work are available and a Regional Training Scheme leading to the D.P.M. (Durham) is in operation. Previous experience of psychiatric work is not essential.

Applications, stating age, qualifications and appointments held, also the names of 3 referees, should be addressed to the Physician-Superintendent at the Hospital.

MANCHESTER REGIONAL HOSPITAL BOARD. SURGICAL REGISTRAR (Resident Surgical Officer), post vacant Rochdale Infirmary.

Apply at once to Group Secretary, Central Offices, Birch Hill Hospital, Rochdale.

MANCHESTER REGIONAL HOSPITAL BOARD, South MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. The Board invite applications from registered practitioners for the post of REGISTRAR (pædiatrics) (resident or non-resident) at the Duchess of York Hospital for Babies vacant 1st March, 1957. Duties include attendance in the Outpatient Department as well as in the wards. Post provides opportunities for teaching and research. D.C.H. or M.R.C.P. an advantage.

Applications, stating age, present post, experience and the names of 2 referees, to be forwarded to the Group Secretary, Withington Hospital, Manchester, 20.

MANCHESTER REGIONAL HOSPITAL BOARD. South MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the post of RESIDENT SURGICAL OFFICER (Registrar grade) at Wythenshawe Hospital. The post will include responsibility for general surgical and gynæcological beds, and is recognised by the Royal College of Surgeons.

Applications, stating age, qualifications, present post, experience, and names of 2 referees, to the Group Secretary, Withington Hospital, Manchester, 20.

MANCHESTER REGIONAL HOSPITAL BOARD. SALFORD HOSPITAL MANAGEMENT COMMITTEE. Applications invited for post of RESIDENT REGISTRAR in Orthopædic Surgery in the above Group, main duties at Hope Hospital.

Applications, together with names and addresses of 2 referees, to be sent to the Group Secretary, Salford Royal Hospital, Salford, 3, immediately.

MANCHESTER, 23. WYTHENSHAWE HOSPITAL. SOUTH MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the post of SENIOR HOUSE OFFICER (plastic surgery) with 3 sessions per week in general surgery at the above Hospital which is a General Hospital with 75 plastic surgery beds.

Applications, with full details, to the Group Secretary, Withington Hospital, Manchester, 20.

MANCHESTER. UNITED MANCHESTER HOSPITALS. SAINT MARY'S HOSPITALS, MANCHESTER. Applications are invited for the post of REGISTRAR in Obstetrics (Resident Obstetric Surgeon), vacant beginning February, for 1 year. Duties include some teaching, supervision of work of House Officers and resident medical students, and very considerable clinical responsibility. Candidates must, therefore, have had fairly full previous experience in obstetrics. Higher qualification not essential.

Forms of application to be obtained from the undersigned and returned completed by 7th January, 1957.

A. R. WISE, General Superintendent.

Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL INFIRMARY, MANCHESTER, 13. SENIOR HOUSE OFFICER (surgical) to commence on 12th March, 1957. Whole-time, mainly non-resident training post, tenable for 6 months, renewable for a second 6 months. Duties allotted in Orthopædic, Surgical Outpatients, and General Surgical Units in rotation. Resident alternate nights for about 3 months when attached to Orthopædic Unit.

Application form obtainable from the undersigned, to be returned by 12th January, 1957. G. H. TAYLOR, Secretary.

MANCHESTER (near). ALTRINCHAM GENERAL HOSPITAL AND ANNEXE. (130 Beds.) Applications are invited for the pre-registration post of JUNIOR HOUSE OFFICER (medical), vacant mid-February, 1957.

Applications to Group Secretary, North and mid-Cheshire Hospital Management Committee, The Hospital, Sinderland-road, Altrincham, Cheshire.

MID GLAMORGAN HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following medical staff vacancies.

Neath General Hospital, Neath (412 Beds)

SENIOR HOUSE OFFICER (pathology), vacant 24th January, 1957.

HOUSE SURGEON, vacant 1st February, 1957.

HOUSE PHYSICIAN, vacant 1st February, 1957.

Bridgend General Hospital, Quarella-road, Bridgend (381 Beds)

SENIOR HOUSE OFFICER (E.N.T.), vacant immediately.

HOUSE SURGEON, vacant 1st February, 1957.

HOUSE PHYSICIAN, vacant 1st February, 1957.

Neath and Bridgend General Hospitals are recognised for the major diplomas and approved by the General Medical Council for Pre-registration Service under Section 2 of the Medical Act, 1950.

Applications, naming 2 referees, to be addressed to the Group Secretary of the Committee, 8, Wind-street, Neath.

NANTWICH. BARONY HOSPITAL. (506 Beds.) RESIDENT SENIOR HOUSE OFFICER (medical) required at the above Hospital. Newly opened unit provides treatment for men, women and children, supported by new Pathological and X-ray Departments. Salary and conditions of service in accordance with Whitley Council scale.

Applications, stating age, qualifications and experience, together with names of 3 referees, to the Group Secretary, South Cheshire Hospital Management Committee, Barony Hospital, Nantwich, Cheshire.

NEATH GENERAL HOSPITAL, Neath. (412 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (pathology) in the Group Pathological Laboratory based on this Hospital. This Laboratory is modern and particularly well equipped and is under the full-time supervision of the Group Consultant Pathologist. The Hospital is recognised for all major diplomas.

Applications, giving full details and naming 2 referees, to be addressed to the Group Secretary of the Committee, Mid Glamorgan Hospital Management Committee, 8, Wind-street, Neath.

NEWCASTLE REGIONAL HOSPITAL BOARD. West CUMBERLAND GROUP OF HOSPITALS. SURGICAL REGISTRAR, to be based on Whitehaven Hospital (124 Beds). Appointment for 1 year in the first instance with likelihood of extension. The post is vacant immediately; modern detached house with garage available from 1st April, 1957.

Applications, with names and addresses of 3 referees, to Senior Administrative Medical Officer, 72, Warwick-road, Carlisle, within 14 days.

NEWMARKET GENERAL HOSPITAL. Applications are invited for the post of HOUSE SURGEON, vacant 1st January, 1957. Duties include surgical house charge of general surgical, E.N.T., and eye cases. Post resident and available for 6 months, recognised for pre-registration.

Applications, with copies of 3 testimonials, to the Medical Superintendent.

NEWPORT, I.W. ST. MARY'S HOSPITAL. Isle of Wight GROUP HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (salary £745) or HOUSE OFFICER for Pre-registration Service (salary £425–£525, according to experience) required as House Surgeon. Post recognised for F.R.C.S. Vacant 23rd January. Married accommodation if required.

Applications, with names of 2 referees, to Hospital Secretary as soon as possible.

NEWTON ABBOT HOSPITAL, S. Devon. Senior House OFFICER (medicine), Male or Female, required 30th December, 1956. Duties divided equally between 20 acute medical beds in General Section and 140 geriatric beds. This officer is also required to stand in when Senior House Surgeon otherwise engaged. Married quarters available.

Applications, stating qualifications, nationality, age, with copy testimonials, to be sent to the Group Secretary, Torquay District Hospital Management Committee, Torbay Hospital, Torquay, S. Devon.

NORTHWOOD, MIDDLESEX. MOUNT VERNON HOSPITAL AND RADIUM INSTITUTE. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. MEDICAL REGISTRAR (resident) required at above Hospital which may be visited by direct appointment with Resident Medical Officer.

Application forms obtainable from, and returnable to, the Group Secretary, Harefield and Northwood Group Hospital Management Committee, Mount Vernon Hospital, Northwood, Middlesex, by 5th January, 1957.

NOTTINGHAM GENERAL HOSPITAL. Resident pre-registration or registered HOUSE SURGEON required early January.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to the Group Secretary.

NOTTINGHAM GENERAL HOSPITAL. Applications are invited for the post of SENIOR HOUSE OFFICER (casualty), duties to commence 31st January, 1957. Establishment 3. Recognised for F.R.C.S. Post offers wide experience of casualty work.

Applications, stating age, nationality, qualifications, and experience, together with copies of testimonials, to be sent to Secretary, General Hospital, Nottingham.

NOTTINGHAM AND MIDLAND EYE INFIRMARY. Required, SENIOR HOUSE OFFICER, duties to commence on 13th January, 1957. Salary and conditions of service in accordance with Ministry regulations. A furnished flat is available for married candidates, if required.

Applications, stating age, qualifications, and experience, together with copies of testimonials, to be sent to the Group Secretary, General Hospital, Nottingham.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL.

SENIOR HOUSE OFFICER in Surgery, vacant 1st February, 1957. Recognised for the F.R.C.S. Greenbank Road Section.

HOUSE SURGEON (pre-registration post), vacant 1st January, 1957. Recognised for the F.R.C.S. Freedom Fields Section.

Applications, stating age, nationality, qualifications and experience, together with the names and addresses of 3 referees, to be sent to—

ARTHUR R. CASH, Group Secretary, Plymouth.
South Devon and East Cornwall General Hospital Group.
7, Nelson-gardens, Stoke, Plymouth.

PONTYPRIDD AND RHONDDA HOSPITAL MANAGE-MENT COMMITTEE.

East Glamorgan Hospital, Church Village, near Pontypridd (316 Beds and large Outpatient Department. Committee's base Hospital serving population of 174,000. Recognised for M.R.C.O.G., F.R.C.S., D.C.H., F.F.A. R.C.S., D.A.)

SENIOR HOUSE OFFICER (obstetrics and gynæcology) to commence 13th February, 1957.
2 HOUSE OFFICERS (medicine).
HOUSE OFFICER (paediatrics).
4 HOUSE OFFICERS (surgery) (to include duties at Porth and District Hospital).
2 HOUSE OFFICERS (obstetrics).
Posts to commence 1st February, 1957.

Llwynypia Hospital, Llwynypia, Rhondda (190 Beds, including acute medical and chronic sick beds)

HOUSE OFFICER (medicine) to commence as soon as possible. Person appointed will also undertake duties at the Group Infectious Diseases Hospital when required.

Applications, stating age, qualifications and experience, together with copies of 2 recent testimonials, to be sent to the Group Secretary, Pontypridd and Rhondda Hospital Management Committee, Courthouse-street, Pontypridd.

POOLE GENERAL HOSPITAL, Poole, Dorset. BOURNE-MOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON (pre-registration) required. The post, which becomes vacant on 7th January, 1957, is recognised for F.R.C.S. Ed. and F.R.C.S. Eng.

Applications to the Hospital Secretary.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE OFFICER (medical) vacant 3rd January, 1957. The duties will be equally divided between work in the acute medical wards, outpatients and a geriatric assessment unit of 76 Beds. The appointment affords an opportunity of seeing large numbers of acute cases and is an excellent one for those studying for a higher medical qualification.

Applications, together with the names of 2 referees, should be sent to E. H. HURST, Group Secretary.
Management Committee Offices, St. Mary's Hospital, Portsmouth.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE.

Royal Portsmouth Hospital

HOUSE PHYSICIAN (pre-registration), 65 medical beds, vacant 4th January 1957.

HOUSE OFFICER (pediatric and medical), 30 Beds. Pre-registrat on. Vacant 16th January.

Saint Mary's Hospital

HOUSE PHYSICIANS (pre-registration), 74 medical beds. 1 vacant 30th January, 1957 ; 2 vacant 31st January, 1957.

HOUSE SURGEONS (pre-registration), 130 surgical beds. 2 vacant 23rd January, 1957 ; 1 vacant 31st January, 1957 ; 1 vacant 1st February, 1957.

Applications, stating age, experience and qualifications, together with the names of 2 referees, should be forwarded as soon as possible to E. H. HURST.
St. Mary's Hospital, Milton-road, Portsmouth.

PORTSMOUTH. SAINT MARY'S HOSPITAL. (700 Beds.) Applications are invited for the appointment of JUNIOR HOSPITAL MEDICAL OFFICER (resident-married or single quarters) wanted at once for duties as follows :—

General responsibility for the staff of House Officers. Medical Officer for 2 mental wards (172 Beds). Casualty Officer for a small Casualty Department and other medical duties which may be defined from time to time.

The successful applicant will be free to act as General Practitioner for the resident nursing staff. He will be expected to maintain a close liaison with the Group Secretary who is responsible for the general administration of the Hospital. The appointment in the first instance will be for a period of 3 years.

Applications, stating age, experience and qualifications, together with names of 2 referees should be forwarded as soon as possible to— E. H. HURST,
Portsmouth Group Hospital Management Committee.
St. Mary's Hospital, Milton-road, Portsmouth.

PAISLEY. ROYAL ALEXANDRA INFIRMARY. House OFFICER (pre-registration) required for Orthopædic and Fracture Unit. Post will become vacant on 1st February, 1957.

Applications to Group Medical Superintendent.

READING AND DISTRICT HOSPITAL MANAGE-MENT COMMITTEE. Applications are invited for the post of RESIDENT SENIOR HOUSE OFFICER (Area Accident and Orthopædic Department), vacant immediately. Recognised for F.R.C.S. Duties including work in area Casualty Department at Battle Hospital, Reading (300 Beds). Person appointed will work with Registrar and House Officers.

Apply, stating nationality, present post and qualifications with dates, together with names of 2 referees, to Group Secretary, 3, Craven-road, Reading.

RHYL. ROYAL ALEXANDRA HOSPITAL. (138 Beds.) Applications are invited from pre-registration or registered medical practitioners for post of HOUSE PHYSICIAN. Post vacant 1st February, 1957.

Applications, with 2 testimonials, to be sent immediately to Group Secretary, Clwyd and Deeside Hospital Management Committee, " Rhianfa," Russell-road, Rhyl.

RHYL. ROYAL ALEXANDRA HOSPITAL. (138 Beds.) Applications are invited from pre-registration or registered medical practitioners for the post of HOUSE SURGEON. Post vacant 1st February, 1957. Recognised for F.R.C.S.

Applications, with 2 testimonials, to be sent immediately to Group Secretary, Clwyd and Deeside Hospital Management Committee, " Rhianfa," Russell-road, Rhyl.

RHYMNEY AND SIRHOWY VALLEYS HOSPITAL MANAGEMENT COMMITTEE. Pre-registration posts.

St. James Hospital, Tredegar (160 medical, obstetric, and chronic sick beds)

HOUSE OFFICER (obstetrics), vacant 1st February.
HOUSE PHYSICIAN, vacant 1st February.

General Hospital, Tredegar (56 acute surgical beds)

HOUSE SURGEON, vacant 1st February.

Caerphilly District Hospital, near Cardiff (226 acute general beds)

HOUSE OFFICER (obstetrics), vacant 1st February.
HOUSE SURGEONS (2 posts), vacant 1st February.

Please apply to Group Secretary, Rhymney and Sirhowy Valleys Hospital Management Committee, Central Offices, Caerphilly-road, Ystrad Mynach, Hengoed, Glamorgan, by 4th January.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) SENIOR HOUSE OFFICER (neurosurgery) required from 18th January, 1957. Suitable for candidates seeking higher medical or surgical qualifications. Recognised for the F.R.C.S. (Eng.).

Apply to Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford, as soon as possible.

ROMFORD, ESSEX. RUSH GREEN HOSPITAL. (301 Beds.) RESIDENT HOUSE OFFICER (general surgery) required from 25th January, 1957. Post is recognised for pre-registration purposes and for F.R.C.S.

Applications should be forwarded immediately to Medical Superintendent stating also names of 2 referees.

ROMFORD, ESSEX. VICTORIA HOSPITAL. (99 Beds.) RESIDENT HOUSE SURGEON (Male) required from 17th January, 1957. Post not approved for pre-registration purposes.

Applications should be forwarded immediately to the Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford.

SALISBURY GENERAL HOSPITAL. Applications are invited for the appointment of RESIDENT HOUSE SURGEON/HOUSE PHYSICIAN to run consecutively in this order from 19th February, 1957, for a period of 6 months in each post. The post is open to pre-registration candidates.

Apply, naming 2 referees, to Group Secretary, Salisbury Group Hospital Management Committee, Odstock Hospital, Salisbury.

SHEFFIELD. KING EDWARD VII ORTHOPÆDIC HOSPITAL, Rivelin Valley-road. (144 Beds.) SHEFFIELD NO. 3 HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the post of SENIOR HOUSE OFFICER (resident) at the above Hospital. The post, which is normally held for 1 year in the first instance, will be subject to the terms and conditions of service for hospital medical staff. Salary £745 p.a. Emolument charge, £150 p.a.

Applications, with names of 2 referees, to Group Secretary, Sheffield No. 3 Hospital Management Committee, Lodge Moor Hospital, Sheffield, 10.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. Applications invited for the post of SENIOR REGISTRAR in Clinical Pathology. Possession of a higher qualification desirable but not essential. The appointment is for 1 year in the first instance and will be reviewed annually. It has been agreed in principle between the Board of Governors of the United Sheffield Hospitals and the Sheffield Regional Hospital Board that the appointment, if extended for the full period, will be divided, subject to satisfactory work and progress, between the United Sheffield Hospitals and a hospital in the Region (at present the Derbyshire Royal Infirmary).

Applications, stating age, qualifications and experience, with the names of 3 referees, should be sent not later than 5th January, 1957, to the Chief Administrative Officer, The United Sheffield Hospitals, West-street, Sheffield, 1.

SLOUGH, BUCKINGHAMSHIRE. UPTON HOSPITAL. Locum ANÆSTHETIC REGISTRAR required 6th–20th January.

Applications, with names of 2 referees, to Secretary.

SOUTHAMPTON EYE HOSPITAL. (32 Beds. Recognised for D.O. examination.) RESIDENT SENIOR HOUSE OFFICER required.

Applications, with copies of testimonials, should be forwarded as soon as possible to Secretary, Southampton Group Hospital Management Committee, Bullar-street.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL. (278 Beds.) RESIDENT HOUSE SURGEON required beginning February. Pre-registration candidates eligible.

Applications, with copies of recent testimonials, should be forwarded to Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON CHILDREN'S HOSPITAL. (Recognised by Conjoint Board for D.C.H.) HOUSE OFFICER required. Post vacant end of January, 1957. Total establishment of 3 residents. Salary, &c., as nationally advocated.

Applications, with copies of testimonials, to be submitted by 5th January to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as Whole-time SENIOR REGISTRAR in Anæsthetics to fill a vacancy in the approved trainee establishment at the Tunbridge Wells Group of hospitals, for duty mainly in the Plastic Surgery and Jaw Injuries Centre at the Queen Victoria Hospital, East Grinstead. Experience is available in general as well as specialised anæsthetics. Candidates should have had general experience in anæsthetics and hold the D.A. or F.F.A.R.C.S. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales) and will be for 1 year in the first instance.

Applications, giving particulars of age, qualifications and experience with relevant dates, together with the names and addresses of 3 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, London, W.1, not later than 12th January, 1957.

SCOTLAND. NORTH-EASTERN REGIONAL HOSPITAL BOARD. Applications are invited from medical practitioners for the full-time post of SENIOR REGISTRAR in Medical Pædiatrics at the Royal Hospital for Sick Children, Aberdeen. Experience in the specialty is required and a higher qualification will be an advantage.

Applications, together with the names and addresses of 2 persons to whom reference may be made, should be forwarded by 10th January, 1957, to the Secretary, 1, Albyn-place, Aberdeen, from whom further particulars may be obtained.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. SENIOR REGISTRAR in Radiotherapy at the Royal Infirmary of Edinburgh and the Western General Hospital, Edinburgh.

Apply, giving particulars of age, qualifications and previous experience, together with the names of 3 referees, to the Secretary, 11, Drumsheugh-gardens, Edinburgh, 3, by 12th January.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the following appointments which will be for 1 year in the first instance :—

SENIOR REGISTRAR in Surgery based at the Victoria Infirmary, Glasgow.
REGISTRAR in Surgery based at Broadstone Hospital, Port Glasgow.
REGISTRAR in Radiodiagnosis based at the Victoria Infirmary, Glasgow.
REGISTRAR in Pathology based at the Victoria Infirmary, Glasgow.
REGISTRAR in Ophthalmology based at the Glasgow Ophthalmic Institution.
REGISTRAR in Anæsthetics based at the Dumfries and Galloway Royal Infirmary.

These appointments are subject to the National Health Service (Scotland) superannuation regulations.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, C.2, by 12th January, 1957.

STAFFORD. STAFFORDSHIRE GENERAL INFIRMARY. (175 Beds—Recovery Unit 32 Beds.) HOUSE SURGEON (pre-registration post), vacant immediately. At end of term of service the successful applicant will be considered for appointment to a pre-registration post of House Physician if he or she has not held such an appointment.

Applications to Group Secretary, Stafford Hospital Management Committee, 13, Foregate-street, Stafford.

STAFFORD. STAFFORDSHIRE GENERAL INFIRMARY. (175 Beds—Recovery Unit 32 Beds.) HOUSE PHYSICIAN (pre-registration post), vacant 10th January. At end of term of service the successful applicant will be considered for appointment to a pre-registration post of House Surgeon if he or she has not held such an appointment.

Applications to Group Secretary, Stafford Hospital Management Committee, 13, Foregate-street, Stafford.

STIRLING AND CLACKMANNAN HOSPITALS BOARD OF MANAGEMENT. RESIDENT HOUSE SURGEON (pre-registration) at Clackmannan County Hospital. Post vacant 1st February, 1957.

Applications, with names of 2 referees, should be sent to the Group Medical Superintendent, Royal Infirmary, Stirling.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. SENIOR HOUSE OFFICER (E.N.T.) required, vacant very shortly. Recognised F.R.C.S. and D.L.O.

Detailed applications, with copy testimonials, to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

ST. ASAPH HOSPITAL. (54 obstetric beds.) Applications are invited from pre-registration or registered medical practitioners for the post of JUNIOR HOUSE OFFICER. Post vacant 1st February, 1957. Tenable for 6 months. Recognised for M.R.C.O.G. and D.Obst.R.C.O.G. Married quarters available.

Applications, with 2 testimonials, to be sent immediately to Group Secretary, Clwyd and Deeside Hospital Management Committee, "Rhianfa," Russell-road, Rhyl.

ST. HELENS AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. The following Resident House Officer posts become vacant on 1st March, 1957.

St. Helens Hospital
HOUSE PHYSICIAN.
HOUSE SURGEON.

Whiston Hospital, Prescot (892 Beds)
HOUSE PHYSICIAN.
HOUSE PHYSICIAN (pædiatric).
HOUSE SURGEON (general).
HOUSE SURGEON (orthopædic).
HOUSE SURGEON (obstetrics).

The above posts are recognised for Pre-registration Service.

Applications, stating age, date of qualification and experience, and giving 2 names for reference, should be forwarded to the Group Secretary, Whiston Hospital, Prescot, immediately. Please state for which post application is made.

STOCKPORT INFIRMARY, Stockport. (163 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (Assistant Resident Surgical Officer), general and orthopædics, vacant 22nd January, 1957. The post is recognised for the F.R.C.S.

Applications, stating age, experience and qualifications, together with copies of 2 testimonials, to be addressed to the Secretary, Stockport and Buxton Hospital Management Committee, 59B, Shaw-heath, Stockport.

SUTTON AND CHEAM HOSPITAL, Cotswold-road, SUTTON, SURREY. HOUSE SURGEON (approved for Pre-registration Service), vacant 26th January.

Applications, stating age, experience and qualifications, with copies of recent testimonials and the names of 2 referees, should be sent to the Secretary at above address.

SWANSEA HOSPITAL, Swansea. (403 Beds.) Glantawe HOSPITAL MANAGEMENT COMMITTEE. Registered medical practitioners are invited to apply for the Locum appointment of RESIDENT ANÆSTHETIST (Senior House Officer grade) at the above Hospital. The Hospital is recognised under the D.A. and F.F.A.R.C.S. regulations.

Applications, stating age, qualifications and experience, together with copies of 2 recent testimonials, should be forwarded to the Hospital Secretary. T. E. JONES, Group Secretary.

SWANSEA. MORRISTON HOSPITAL. (501 Beds.) GLANTAWE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the resident post of SENIOR HOUSE OFFICER in the Obstetric and Gynæcological Unit of the above Hospital. Vacancy on 1st January, 1957.

Applications, with full particulars, together with copies of 2 recent testimonials, should be sent to the Medical Superintendent of the Hospital. T. E. JONES, Group Secretary.

SWINDON AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications invited for the appointment of SENIOR HOUSE OFFICER as Casualty Officer and Orthopædic House Surgeon at Great Western Hospital, Swindon. Post recognised by R.C.S. for 6 months of years training under Fellowship regulations. Work of Accident and Orthopædic Department, associated with Nuffield Orthopædic Centre (Wingfield Morris Orthopædic Hospital), Oxford, includes large number of industrial injuries. Salary £745 p.a., less charge for residential emoluments.

Full details and names of 3 referees to Secretary, 7, Okus-road, Swindon, Wilts, immediately.

TORQUAY. TORBAY HOSPITAL. (166 general beds.) RESIDENT HOUSE OFFICER (surgical), Male or Female, required approximately middle January, 1957. Post recognised for F.R.C.S. and pre-registration purposes. There is a complement of 6 Resident House Officers.

Applications, stating qualifications, nationality, and age, together with copy testimonials (quoting reference F.955/74) to the Group Secretary, Torquay District Hospital Management Committee, Torbay Hospital, Torquay, S. Devon.

TORQUAY. TORBAY HOSPITAL. Resident Casualty OFFICER (Senior House Officer status) required. There is a complement of 6 Resident House Officers.

Applications, as soon as possible (quoting Ref. F.955/76), stating qualifications, nationality, age, with copy testimonials to the Group Secretary, Torquay District Hospital Management Committee, Torbay Hospital, Torquay, S. Devon.

WATFORD, HERTFORDSHIRE. PEACE MEMORIAL HOSPITAL. (208 Beds.) ORTHOPÆDIC HOUSE SURGEON (with certain casualty duties) required. Post recognised for F.R.C.S.(Eng.) examination. Intermediate or Senior post, depending on experience, for Orthopædic Unit (30 Beds). The Orthopædic Service is in charge of a Consultant and Registrar closely associated with a Postgraduate Teaching Hospital.

Applications, with copies of 2 testimonials, to the Administrator.

WATFORD, HERTFORDSHIRE. PEACE MEMORIAL HOSPITAL. (208 Beds.) Applications are invited for the post of HOUSE PHYSICIAN (pre-registration post). Salary according to the National Health Service scale.

Applications, with copies of recent testimonials, to the Administrator.

WATFORD, HERTFORDSHIRE. PEACE MEMORIAL HOSPITAL. (208 Beds.) Applications are invited for the post of HOUSE SURGEON at the above Hospital. This is a pre-registration post and is recognised for F.R.C.S. Salary according to the National Health Service scale.

Applications, with copies of recent testimonials, to the Administrator.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL. (313 Beds.) CASUALTY OFFICER (Senior House Officer grade) required. Vacant 28th January. Post recognised for the F.R.C.S. The appointment will be for 6 months in the first instance.

Applications, with copies of 2 testimonials, to the Group Secretary.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL. (313 Beds.) HOUSE SURGEON to the Senior Surgeon, vacant 1st January.

Applications, with copies of 2 testimonials, to be sent to the Group Secretary.

WIGAN AND LEIGH HOSPITAL MANAGEMENT COMMITTEE.

Royal Albert Edward Infirmary, Wigan
3 HOUSE SURGEONS (pre-registration posts).

Leigh Infirmary
HOUSE SURGEON (pre-registration post).
Vacant early January.

Applications, with names of 2 referees, to the Secretary, Knowsley House, Wigan.

WELSH REGIONAL HOSPITAL BOARD. Registrar (general surgery), East Glamorgan Hospital, Church Village, near Pontypridd (316 Beds). Committee's Base Hospital serving 174,000 population. Also expected serve other hospitals within Group. Hospital recognised for F.R.C.S. Subject to review end of first year.

Application forms from Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff, within 14 days.

WEST DORSET GROUP HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEONS (Male or Female) required for 2 resident posts, vacant early February, 1957 :—

(*a*) Dorset County Hospital, Dorchester (109 Beds).

(*b*) Weymouth and District Hospital, Weymouth (124 Beds).

Both appointments are recognised for F.R.C.S. examination, and approved for Pre-registration Service.

Applications, stating age and qualifications, together with copy testimonials, to Group Secretary, West Dorset Hospital Management Committee, Damers-road, Dorchester, Dorset, immediately.

WINDSOR. KING EDWARD VII HOSPITAL. House PHYSICIAN required, Male or Female, for post vacant 11th February. Preference given to persons seeking pre-registration post. Applicants required to be members of a Medical Protection Society.

Applications, stating age, qualifications with dates and nationality, with copies of 3 recent testimonials, to Secretary.

WORCESTER ROYAL INFIRMARY. (213 Beds.) House SURGEON (pre-registration or otherwise) for Orthopædic Department required mid-January. Post recognised for F.R.C.S. examinations.

Applications to Secretary.

WREXHAM. WAR MEMORIAL HOSPITAL. (230 Beds.) Applications are invited for the post of HOUSE SURGEON at the above Hospital, to commence duties on 1st February, 1957. The appointment is recognised for the Diploma of F.R.C.S. (Eng. and Edin.) and is a pre-registration post.

Applications, stating age, nationality, qualifications, and experience, with copies of 2 recent testimonials, to be sent to the Group Secretary, Maelor General Hospital, Wrexham, as soon as possible.

WREXHAM. MAELOR GENERAL HOSPITAL. (591 Beds.) Applications are invited for the post of HOUSE SURGEON at the above Hospital, to commence duties on 1st February, 1957. The appointment is recognised for the Diploma of F.R.C.S. (Eng. and Edin.) and is a pre-registration post.

Applications, stating age, nationality, qualifications, and experience, with copies of 2 recent testimonials, to be sent to the Group Secretary, Maelor General Hospital, Wrexham, as soon as possible.

DUBLIN. ROYAL VICTORIA EYE AND EAR HOSPITAL, Adelaide-road. E.N.T. DEPARTMENT. A vacancy for a HOUSE SURGEON (E.N.T. Department) will occur on 1st February, 1957. Salary £275. Hospital recognised for the D.L.O. examination and provides experience in all branches of E.N.T. work.

Applications to be sent to the Registrar at above Hospital not later than 7th January, 1957.

NORTHERN IRELAND HOSPITALS AUTHORITY. Applications are invited for a whole-time post as TUTOR/REGISTRAR in General Surgery at hospitals managed by the Belfast Hospital Management Committee for the period ending 30th September, 1957. The appointment may be made in either of 2 grades : viz., Senior Registrar or Principal Registrar (the analogous grades in Great Britain being Registrar and Senior Registrar) and will be made jointly by the Queen's University, Belfast, and the Authority, and will involve teaching and other University duties as Senior or Principal Tutor.

Applications should be made on a form which may be obtained (with further particulars) from the Secretary, Northern Ireland Hospitals Authority, 44-46, Queen-street, Belfast, and which must be returned so as to be received not later than 12th January, 1957.

NEW YORK. NEW ROCHELLE HOSPITAL, New ROCHELLE, NEW YORK, U.S.A. (360-Bed general community hospital.) Approved by the Joint Commission on Accreditation of Hospitals. Also approved by the American College of Surgeons and American Medical Association for Interneship and Residency training. Only graduates from approved university schools accepted. INTERNESHIPS available for the 1 year term commencing 1st July, 1957. Stipend is $200 per month plus complete maintenance. Passage back to England paid by Hospital after completion of 12-month Interneship.

Apply Superintendent.

NEW YORK. ALBANY HOSPITAL, Albany, New York, U.S.A. PSYCHIATRY RESIDENCIES available in 655-Bed University-teaching General Hospital with 60-Bed acute treatment Psychiatric Unit fully approved for 3 years training. Experience includes dynamically-oriented psychotherapy with children and adults, shock therapies, and neurologic training. Salary range $3000–$4000 annually.

Address inquiries to Medical Director.

B.W.I. UNIVERSITY COLLEGE HOSPITAL OF THE WEST INDIES. Applications are invited for the post of SENIOR CASUALTY OFFICER (medical) available immediately. Applicants should have been qualified for at least 2 years. Salary at the rate of £850 p.a., less a deduction of £145 p.a. for single accommodation and board. The appointment will be made on contract for 1 year and return passages will be paid for 1 person only.

Further information may be obtained from the Hospital Manager and Secretary, University College Hospital of the West Indies, Mona P.O., Jamaica, B.W.I., to whom applications, stating age, nationality, details of qualification, experience, together with the names and addresses of 3 referees or copies of 3 recent testimonials, should be sent immediately.

Public Appointments

RE-ADVERTISEMENT

ADMINISTRATIVE COUNTY OF LONDON. Metropolitan Borough of Wandsworth. Combined appointments of DEPUTY DIVISIONAL MEDICAL OFFICER AND DEPUTY MEDICAL OFFICER OF HEALTH of Wandsworth. The London County Council and the Metropolitan Borough Council of Wandsworth invite applications from registered medical practitioners holding a Diploma in Public Health for the combined appointment of Deputy Divisional Medical Officer of the County Council's Health Division 9, comprising the Metropolitan Boroughs of Battersea and Wandsworth, and Deputy Borough Medical Officer of Health for Wandsworth. Remuneration will be in accordance with the formula for mixed appointments approved by Committee "C" of the Medical Whitley Council and lying within the range £2028–£2368. Commencing salary within this range will depend on the points on the constituent scales at which the 2 authorities respectively place the successful candidate. These 2 scales are : Deputy Divisional Medical Officer £1675–£55–£2005 and Deputy Borough Medical Officer of Health £1910–£105–£2120–£55–£2175.

Full particulars of the combined appointments and application forms may be obtained from the Clerk of the London County Council (W1), The County Hall, Westminster Bridge, London, S.E.1. Completed forms should be returned by not later than first post on Monday, 14th January, 1957. (2406.)

HER MAJESTY'S OVERSEA SERVICE. Kenya. Medical OFFICERS with qualifications registrable in United Kingdom required for general duties. Successful candidates may be posted to any station in Kenya. During earlier years of service an officer will be expected to carry out general medical and surgical duties including varying amount of public-health administration. In most stations, even if remote from the larger towns, it is possible to maintain interest in any particular branch of medicine or surgery, to which the officer is attracted. The work of every medical officer is based on a hospital which may vary in size and facilities from small district hospital, meeting needs of comparatively primitive community, to large and modern provincial hospital. Appointments can be made on permanent basis with pension (non-contributory), or on short-term contract with gratuity (taxable) payable on satisfactory completion of service. Normal retiring age is 55. Salary ranges from £1284 to £2115 a year, starting point determined by experience. 4 extra increments given to successful candidates possessing the F.R.C.S., M.R.C.P., D.P.H., or other approved higher qualifications. Permanent Medical Officers are eligible to be considered at any time for promotion to super-scale posts in Kenya and other territories in medical administrations or, if they possess higher qualification and suitable experience, in specialist posts. Quarters at rental varying from £30 to £78 a year according to size and type, and furniture at rate varying from £15 to £36 a year. Free passages in both directions for Officer and wife and up to cost of 1 adult fare for children. Taxation at local rates. Annual local leave permissible and generous home leave granted after each tour of from 24 to 45 months. Educational facilities available.

Application forms from Director of Recruitment, Colonial Office, Great Smith-street, London, S.W.1 (quoting No. BCD. 117/7/02).

HER MAJESTY'S OVERSEA SERVICE. Federation of NIGERIA. MEDICAL OFFICERS OF HEALTH required for administration of public health and control of sanitary matters, or if posted to sea or airport, the duties of Port Health Officer. May be required to perform general duties of Medical and Health Officer and other duties in connection with epidemic diseases. Candidates must possess medical qualifications registrable in the United Kingdom and D.P.H.

Appointment may be made :—

(*a*) On 3 years probation for permanent and pensionable employment. Pension (non-contributory) at rate of 1/600th of final pensionable emoluments for each completed month of reckonable service.

(*b*) From National Health Service. Candidates may leave but retain superannuation rights up to 6 years and receive a gratuity (taxable) of 20% of the aggregate of salary. Salary for officer appointed under (*a*) or (*b*) ranges from £1284 to £1950 p.a., or

(*c*) On short-term contract (2 tours each of 18–24 months) with salary of £1536–£2286 and gratuity (taxable) of £37 10s. for each completed period of 3 months service (including leave).

Officer appointed under (*a*) or (*c*) is required to contribute to a Widows' and Orphans' Pension scheme.

Quarters at low rental. Free return passages for Officer and wife. Return passages for children, to age 18, provided this does not exceed cost of 2 adult return passages in any 1 tour of service. Children's (separate domicile) allowance of £75 a year for each child under 18, ceasing if children join parents in Nigeria. Income-tax at low local rates. Local leave permissible and generous home leave after each tour.

Application forms from Director of Recruitment, Colonial Office, London, S.W.1 (quoting No. BCD.117/14/07).

HER MAJESTY'S OVERSEA CIVIL SERVICE. Medical OFFICER required in Sarawak to take charge of new 200-Bed mental hospital, now nearing completion, and supervise training of subordinate staff in mental work. Candidates must possess qualifications registrable in United Kingdom and have had at least 1 years postgraduate hospital experience including mental hospital work. Appointment on permanent basis with pension (non-contributory), or from National Health Service, when superannuation rights (up to 6 years) may be retained and a gratuity (taxable) of 20% of aggregate of salary on completion of engagement is payable. Salary scale £1176–£1988 a year. In addition inducement pay is payable at rate of £252–£336 a year, plus education allowance of £140 a year for up to 2 children between ages of 5 and 17 educated outside Sarawak, and a child allowance of 7½% of basic salary (maximum £140 a year) for married officers with dependent children under age of 17. Partially furnished quarters provided when available at low rental. Free passages for Officer, wife, and up to 3 children under 18 years of age. Income-tax at local rates. Generous leave.

Application forms from Director of Recruitment, Colonial Office, London, S.W.1 (quoting No. BCD.117/24/08).

DURHAM COUNTY COUNCIL. Health Department. ASSISTANT MATERNITY AND CHILD WELFARE MEDICAL OFFICER. Applications are invited from registered medical practitioners (Female). Commencing salary £1050 p.a., rising by annual increments of £50 and £55 to £1475 p.a. Travelling expenses will be paid in accordance with Whitley Council scale.

The appointment is subject to certain conditions, particulars of which may be obtained from the County Medical Officer of Health, Shire Hall, Durham, to whom applications, together with the names of not more than 3 referees, should be sent not later than 12th January, 1957. Canvassing members of the Council is prohibited.

J. K. HOPE, Clerk of the County Council.

KINGSTON UPON HULL. CITY AND COUNTY OF KINGSTON UPON HULL. DEPUTY MEDICAL OFFICER OF HEALTH, DEPUTY PRINCIPAL SCHOOL MEDICAL OFFICER, DEPUTY PORT MEDICAL OFFICER OF HEALTH, MEDICAL INSPECTOR OF ALIENS. Applications are invited from duly qualified medical practitioners for the appointment of Deputy Medical Officer of Health for the City, to be held in conjunction with the appointments of Deputy Principal School Medical Officer, Deputy Medical Officer of Health (at Hull) to the Hull and Goole Port Health Authority, and Medical Inspector of Aliens under that Authority. Applicants must hold the Diploma in Public Health, and the possession of additional degrees, diplomas or academic distinctions will be considered an advantage. Salary scale £1700 p.a., rising by 2 annual increments of £105 and 1 of £55 to a maximum of £1965 p.a., plus essential user car allowance.

Particulars of the appointment and forms of application may be obtained from the Medical Officer of Health, Guildhall, Kingston upon Hull, to whom completed application forms must be returned not later than 7th January, 1957.

KINGSTON UPON HULL. CITY AND COUNTY OF KINGSTON UPON HULL. Applications are invited from registered medical practitioners, preferably holding a Diploma in Public Health, for the appointment of ASSISTANT MEDICAL OFFICER for duties in the Maternity and Child Welfare, School Health and other Local Health Authority's Services. Salary scale £1050–£50(3)–£55(5)–£1475, plus essential user car allowance.

Particulars of the appointment and forms of application may be obtained from the Medical Officer of Health, Guildhall, Kingston upon Hull, to whom completed application forms must be returned not later than 7th January, 1957.

WEST BROMWICH. COUNTY BOROUGH OF WEST BROMWICH. MEDICAL OFFICER OF HEALTH, CHIEF WELFARE OFFICER AND PRINCIPAL SCHOOL MEDICAL OFFICER. The Council invite applications for the above post from gentlemen who hold the qualifications in accordance with the Local Government Act, 1933, and the regulations made thereunder. The salary will be £1960 p.a., rising by 4 annual increments of £55 and 1 increment of £50, to £2230, together with a car allowance. The Council have adopted the conditions of service agreed by the Medical Council of the Whitley Councils for the Health Services.

Full particulars and form of application may be obtained from the undersigned, and applications must reach me not later than 14th January, 1957. Envelopes should be endorsed "Medical Officer of Health."

Town Hall, West Bromwich. J. M. DAY, Town Clerk.

GOVERNMENT OF HONG KONG. Government Patho-LOGIST required for duties including vaccine production, public health laboratory work, clinical pathology, and post-mortem work. The post is a senior one and candidates (who should be under 45 years of age) should possess qualifications registrable in the United Kingdom, a postgraduate Degree or Diploma in Pathology or Bacteriology, and have had 5 years experience in pathology including bacteriology. Appointment on contract for 3 years.

Emoluments :—

(*a*) Salary £2325 a year.

(*b*) Expatriation pay £337 10s. a year.

(*c*) Temporary variable cost-of-living allowance (present rates) :—

Single Officers £127 a year.

Married Officers without children £413 a year.

Married Officers with children £696 a year.

(*d*) Gratuity (taxable) £250 a year.

Free passages for Officer, wife, sons under 18 and daughters under 21, up to 5 passages in all. Quarters when available at rental not exceeding 1/7th of basic salary.

Application forms from Director of Recruitment, Colonial Office, London, S.W.1 (quoting No. BCD. 117/51/025).

GOVERNMENT OF ADEN PROTECTORATE. Ophthal-MOLOGIST required by Aden Protectorate Health Service, who will be based on Makhzan, Western Aden Protectorate, where there is a developing base hospital and a health services training centre. He will, however, be expected to spend about half his time on tour in both Protectorates, working in hospitals, health units, in the field, and training sub-professional staff in simple eye work. Private practice is allowed but will be very limited. Candidates must possess qualifications registrable in United Kingdom, the D.O.M.S. or equivalent and practical experience. Knowledge of Arabic an advantage.

Appointment on contract terms for 4 years with gratuity (taxable) of £37 10s. for each completed 3 months of service, payable on satisfactory completion of contract. Salary scale from £1212 to £1992 a year, starting point depending upon age and experience. Following allowances also payable :—

(*a*) Outfit allowance £60.

(*b*) Education allowance in lieu of passage entitlement for children between 8–18 undergoing full-time education in the United Kingdom.

(*c*) Protectorate allowance of from £132 to £180 a year.

Furnished quarters at low rental. Income-tax at local rates. Free passages provided for Officer, wife, and up to 4 children under age of 18. Tour of service 18–24 months. Generous home leave granted after each tour.

Application forms from Director of Recruitment, Colonial Office, London, S.W.1 (quoting No. BCD. 117/2/010).

MIDDLESEX COUNTY COUNCIL. County Health DEPARTMENT. ASSISTANT MEDICAL OFFICER (whole-time) required initially in Area No. 7 (Ealing and Acton). Duties mainly for supervision of health of mothers, young children and school children. D.P.H. or equivalent an advantage. Salary £1050, rising to £1475 p.a. Must if required act as Deputy Medical Officer of Health for 1 or other of the County Districts in the Area. Salary then as for mixed appointments. Established, pensionable, subject to medical assessment and prescribed conditions.

Application forms from Joint Area Medical Officer, Town Hall, Ealing, W.5, to be returned by 9th January (quote U.267/TL). Canvassing disqualifies.

YORKSHIRE. DIVISIONAL ADMINISTRATION OF THE PREVENTIVE MEDICAL SERVICE IN THE ADMINISTRATIVE COUNTY OF THE WEST RIDING OF YORKSHIRE PUBLIC HEALTH DIVISION NO. 3 (KEIGHLEY). Appointment of MEDICAL OFFICER OF HEALTH AND SCHOOL MEDICAL OFFICER to the Borough of Keighley and DIVISIONAL MEDICAL OFFICER to the West Riding County Council. Applications are invited from registered medical practitioners who must also be registered in the medical register as the holder of a Diploma in Sanitary Science, Public Health, or State Medicine, for the above-mentioned whole-time appointment. The effect of the "mixed" appointment will be to secure that the planning of the day-to-day administration and the execution of all or practically all public health matters of the division will be in the hands of 1 person, the Divisional Medical Officer of Health, locally. A Divisional Public Health Office with necessary staff will be provided in Keighley.

The salary attached to the post is as follows :—

(*a*) For Medical Officer of Health duties—£920 rising by increments of £27 10s. to £1030.

(*b*) For County Council duties—£981 5s., rising by increments of £31 5s. (1) and £34 7s. 6d. (7) to £1253 2s. 6d.

In addition, there will be a travelling and subsistence allowance at the rate of £100 p.a. The Borough of Keighley is an "Excepted District" under the Education Act, 1944.

The appointment will be made jointly by Keighley Corporation and the County Council and the person appointed will not be permitted to engage in private practice.

Forms of application and terms and conditions of service may be obtained from the County Medical Officer, County Hall, Wakefield, to whom completed forms must be delivered not later than 23rd January, 1957. Canvassing of members of the appointing bodies directly or indirectly will disqualify any candidate for the post.

H. W. SMITH, Town Clerk.
J. WOOD-WILSON, County Medical Officer.

General Practice

For an Executive Council post (England and Wales) apply on form E.C.16A obtainable from the council. Mark envelope "Vacancy."

SMETHWICK, STAFFORDSHIRE. Applications invited for VACANCY (urban), list approximately 2150. Residence and surgery available for purchase. Apply on Form E.C.16A not later than 7th January, 1957, to the Clerk, Smethwick Executive Council, Barclays Bank Chambers, South-road, Smethwick, 41.

Hospital Services : Non-Medical Appointments

GUILDFORD. GROUP LABORATORY. Biochemist (non-medical). Basic grade, required for the above Laboratory. Qualifications, salary, &c., as defined by the Whitley Council. Applications, giving full particulars and names of 2 referees, to the Hospital Secretary, St. Luke's Hospital, Guildford.

Miscellaneous

"Pregnancy Diagnosis by the Xenopus Method," 24-hour service. Send specimen of urine and £1 1s. fee. Hæmatology, Biochemistry, Flame Photometry.—WELBECK BIOLOGICAL LABORATORIES, 26, Park-crescent, Portland-place, W.1 (MUSeum 5386–7).

Applicants for posts requiring testimonials copied or duplicated should communicate with MANTON SECRETARIAL SERVICE LTD., 98, Victoria-street, S.W.1 (Phone : VICtoria 0141), who are specialists in this kind of work.

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Junior Paynocil tablets each contain 2½ grains of aspirin and 1¼ grains of glycine. Besides speeding disintegration and eliminating the unpleasant aspirin flavour, glycine confers on each aspirin particle a lubricant, demulcent and protective barrier.

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TOPICAL OINTMENT

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'HYDRODERM' is indicated in allergic skin lesions such as:

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contact dermatitis ***intertrigo***
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and similar eczematoid conditions especially when secondary infection is present

[1] "*Advances in the Treatment of Skin Diseases*" "*The Practitioner*", October 1955

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